PCGEducation™

ILDS Data Warehouse Architecture & System Design

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Deliverable 3:
Data Architecture Requirements

DOCUMENT PROFILE

Purpose and Objectives

- To define the requirements for the Illinois Longitudinal Data System (ILDS) Phase I and II engineering and deployment
- To set a vision for ILDS Phase III

Scope

- Overview of context
- Functional requirements of the data warehouse
- Documentation of existing sources and reports

Intended Audience

- Illinois State Board of Education (ISBE) Executive Team
- Data advisory committee and other stakeholders
- Internal ISBE data management staff
- Data warehouse engineers

Assumptions and Constraints

- ILDS Phase I and II scope is dictated by Statewide Longitudinal Data System (SLDS) 2009 Grant as modified by the SLDS expansion grant and will **include teacher-student link with period attendance and grades.**
- All sources and reports included in the Data Warehouse Architecture Request for Sealed Proposal (RFSP) were presumed to be included, unless explicitly added or excluded through this project.
- ILDS Phase III vision will be guided by a more expansive scope as described by the Learning and Performance Management components of the Illinois Race to the Top (RTTT) proposal.

Document Overview

The document consists of four main sections:

I. Introduction
II. Program: Functional Objectives
III. Data Domains: Subjects
IV. Documentation of Existing Systems
V. Security and Confidentiality Requirements

I. INTRODUCTION

Context

ISBE has laid a strong foundation for its State Longitudinal Data System, showing continued support from both the state and federal level.

In **2004**, ISBE selected IBM as the contractor to build its statewide Student Information System (SIS). The SIS data collection has been continuously updated and continues to be the primary student level data collection system used by the state.

In **2006**, ISBE contractors MTW Solutions developed the "Feasibility Study and Functional Requirements Analysis for Development and Implementation of the ISBE Data Warehouse."

A **2008** SLDS Grant from the U.S. Department of Education, Institute of Education Sciences, provided ISBE with $8.9 million to develop and deploy the Illinois Longitudinal Data System (ILDS). Through this grant, ISBE is funded to: Establish a State Education Data Advisory Group; Develop an Enterprise-wide Data Architecture; Improve Data Quality; Develop an Education Enterprise Data Warehouse; Link the ISBE Student ID, Post-Secondary, and Workforce Data for Research.

Following this award, in **2009** *Public Act 096-0107* was signed into law authorizing ISBE and other stakeholders to create a P20 state longitudinal data system.

The U.S. Department of Education awarded ISBE with a second SLDS Grant in **2010** of $11.9 Million to: Establish a Statewide Transcript System, Integrate Student-level Data with Teacher Data, Continued Development of Post-Secondary Data Systems, and Expand Early Childhood Data Collection.

In the Fall of 2010, although ISBE was not awarded a highly competitive Race to the Top (RTTT) grant, State Superintendant Chris Koch stated ISBE's commitment to continue the advance a Reform Agenda, *"I am proud of the effort that our state has made to put together such an ambitious plan, which I believe should serve as our blueprint for where we need to take education through the next decade."*

Using funding from the 2008 SLDS Grant, ISBE has selected Public Consulting Group (PCG) to develop the **ILDS Data Warehouse Architecture**. PCG is also under contract to the Council of Chief State School Officers (CCSSO) to develop the P20 State Core for the Common Data Standards (CDS) and National Education Data Model (NEDM). Where appropriate, materials from both projects have been compared and shared.

Why an Architecture?

Few would build any but the most simple of houses without architect designed plans. Yet, many states have created data management systems with little or no planning and design up front. The results are as predictable as they are avoidable, in particular through the adoption of key principles that should guide the quality data management life cycle:

1. Factor 50% of your resources for design
2. Start with a long-range view of the user requirements
3. Manage the metadata.

Metadata (e.g. data about data), is in fact the most important component of longitudinal data management.

PCG's methodology, described in Section IV focuses on metadata management. Even if the data warehouse was never built, the metadata repository we have assembled with ISBE as part of the project will provide enormous value to ISBE to make data management more transparent and standard.

II. PROGRAM: FUNCTIONAL OBJECTIVES

The ILDS Data Warehouse is intended to cover the domain of data that includes Early Childhood (EC), elementary and secondary (K12), post-secondary (PS), and workforce (WF). There are three major groups of functional requirements envisioned for the Data Warehouse:

1. Reduce local reporting burdens, increase ISBE data management effectiveness, and ensure **Compliance with State and Federal Reporting Requirements**
2. Link early childhood, K-12, post-secondary, and workforce data sets and enable a **Continuous Improvement Cycles for the Existing P20 Education Process**
3. Provide stakeholders, including principals and teachers, with access to a **Platform to Advance the Illinois Reform Agenda**

Each is described below:

1. Compliance with State and Federal Reporting Requirements

The data warehouse should support state and federal reporting. PCG has developed a detailed map of the 625 distinct file types needed for Federal reporting associated with the following programs:

1. EDFacts
2. Civil Rights Data Collection
3. State Fiscal Stabilization Fund
4. Migrant Student Records Exchange Initiative
5. Consolidated State Performance Reports
6. Office of Special Education Programs
7. Integrated Postsecondary Education Data System
8. Common Core Data (fiscal)
9. Safe and Drug Free Schools and Communities Act
10. NCLB titles not collected by EDFacts (McKinney-Vento)
11. Perkins Act
12. Race to the Top
13. Teacher Incentive Fund
14. Annual Report of Children in State Agency and Locally Operated Institutions for Neglected and Delinquent (N or D) Children.

In addition, the data warehouse should contain the data needed to fulfill the following Illinois state specific reporting requirements:

1. Annual School Report Card
2. Bilingual Education Reports
3. Regional Safe Schools
4. Truants Alternative & Optional Education Program
5. Child Nutrition Services
6. Biennial EEO-5
7. District Special Education Profile
8. Teacher Reduction
9. Educator Supply and Demand
10. Pre K At Risk

11. Annual Report of the Budget
12. General State Aid
13. Annual Statistical Report.

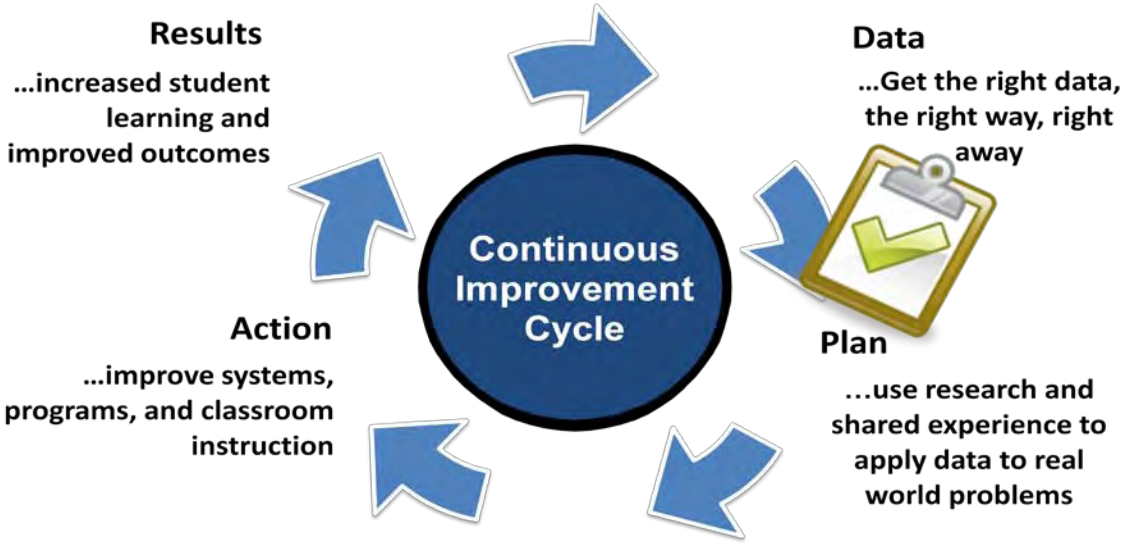
While the ILDS Data Warehouse cannot on its own alter or reduce data collection, by organizing, linking, and making transparent all transformations to the data, it can be made more useful for cross program purposes. The planned use of SIS student identity, demographic, and enrollment data by CTE and Special Education is a prime example of this consolidation.

2. Continuous Improvement Cycles for the Existing P20 Education Process

As documented in section III, we have identified and focused on six primary classes of subjects:

1. **Data Sets**
2. **Organizations** (RCDTS + Programs)
3. **People** (Students, Staff, Parents)
4. **People-Organization Relationships** (Enrollments, Class Roster, Program Participation)
5. **Standards & Assessments** (Items, Subtests, Scores, Learning Standards)
6. **Events** (Incidents, Special Education events, Attendance).

Of the six, only **organizations** and **people** have real world presence and can be acted upon. For each, there exists a cycle of continuous improvement within the current structure of the public education system:



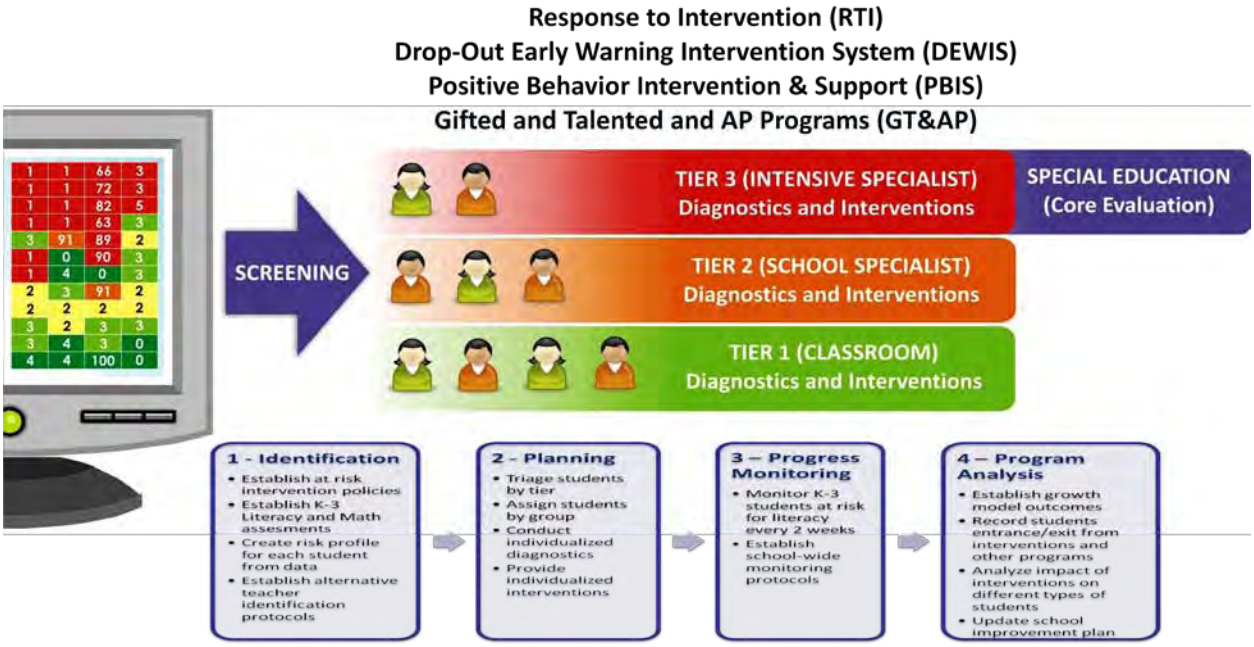
These cycles go by various names. For schools, districts, and teacher training and preparation institutions, it is sometimes called:

- Benchmarking
- Balanced Scorecard
- School Improvement
- HS Feedback Report
- Teacher Preparation Value Added.

For students, current policies focus resources particularly towards students at-risk. These systems are sometimes called

- DEWIS – Drop Out Early Warning System
- PBIS – Positive Behavior Intervention System
- RTI – Response to Intervention.

In all of the above, there is a common process of (1) **Identification** – screening with data, referrals; (2) **Planning** – assigning students to interventions/programs; (3) **Progress Monitoring** – rapid cycle changes in action based on data; and (4) **Program Analysis** – correlating student participation in programs with student growth and other valid outcomes. While these processes originate in K-12, with some alterations, they are also applicable to early childhood and post-secondary.



For teachers, the cycle can only start when student growth data is linked correctly to one or more teachers of record. The data warehouse should continue to align with the national work being done to establish **standard, valid, feasible methods for linking teachers to student data**.

3. A Platform to the Advance the Illinois Reform Agenda

The third group of functional requirements for the data warehouse are less easily put into place. This Reform Agenda envisions a next generation learning environment built on access to complete, accurate, and timely data. In this vision, the ILDS Data Warehouse must:

a. Provide **students and parents** with access to diagnostic test results and a life-long transcript of learning benchmarks and events, starting with early childhood care, extending through K-12 education and post-secondary education, into the workforce.

b. Ensure that **teachers** receive timely, structured and relevant access to student data to better target and differentiate instruction, including:

a. Access to detailed student reports, organized by classroom, on academic performance, attendance and services provided.
b. Readiness reports on individual students to identify if they are on track for success.
c. Early warning system reports with alerts for individual students who are at-risk.

c. Create new, rigorous **teacher and principal evaluation** systems that incorporate student growth as a significant factor.
d. Include the means to link the information regarding **teacher preparation programs** within the state.

This Reform Agenda is aligned with a national Reform Agenda that builds off No Child Left Behind, national Common Core academic standards, National Education Data Model (NEDM) and Common Data Standards (CDS), two national Assessment Consortia, and a new national network of next generation learning environments.

Over the next ten years, leading national thinkers such as Clayton Christen predict that, "by 2019, about 50 percent of high school courses will be delivered online. In other words…, the world is likely to begin flipping rapidly to student centric online technology." (Christen, Clay, *Disrupting Class*, p.98). In this new world, students will use not one, but multiple devices each day to access their own, pervasive "virtual laptop" to support a hybrid mix of online and face-to-face learner-centric experiences. Educators, parents, and other students will work in partnership with each student to achieve internationally benchmarked learning objectives at individualized pace.

Like a car navigation system, the learning management systems of the future will know the current location of each learner and be able to plot multiple, individualized paths to the Common Core and other academic goals. Students will be able to select preferences of modality of instruction, language, and time. And, like a car navigation system, even if they decide to take a detour, the system will always know where they are, where they want to go, and multiple paths to get there.

In addition to the three primary groups of requirements described above, a list of specific functional requirements is detailed in Appendix A.

III. DATA DOMAINS: SUBJECTS

Based on discussions with ISBE program staff and analysis of the functional objectives the following six subject areas were identified as necessary to fulfill the functional objectives of the data warehouse:

1. Data Sets - Time
2. Organizations
3. People
4. People-Organization Relationships
5. Standards & Assessments
6. Events.

Significantly, subjects such as nutrition, revenue disbursement, and of teacher licensure operations that do not relate to the three identified categories of functional objectives are **not** included in the core data warehouse design. However, sources related to these domains should be catalogued properly as part of ISBE's metadata management plan and, thus, become more transparent and accessible when needed. Below, the six subjects needed for the core data warehouse are defined and described:

1. Data Sets - Time

The first subject that must be documented to establish a common understanding between agency staff and data warehouse engineers is somewhat abstract. The concept of "Data Set" can be understood as similar to what a header record is to a file or a card catalog is to a book. The Data Set subject must define each repository and functional component sufficiently to describe the context, type, and version of the repository.

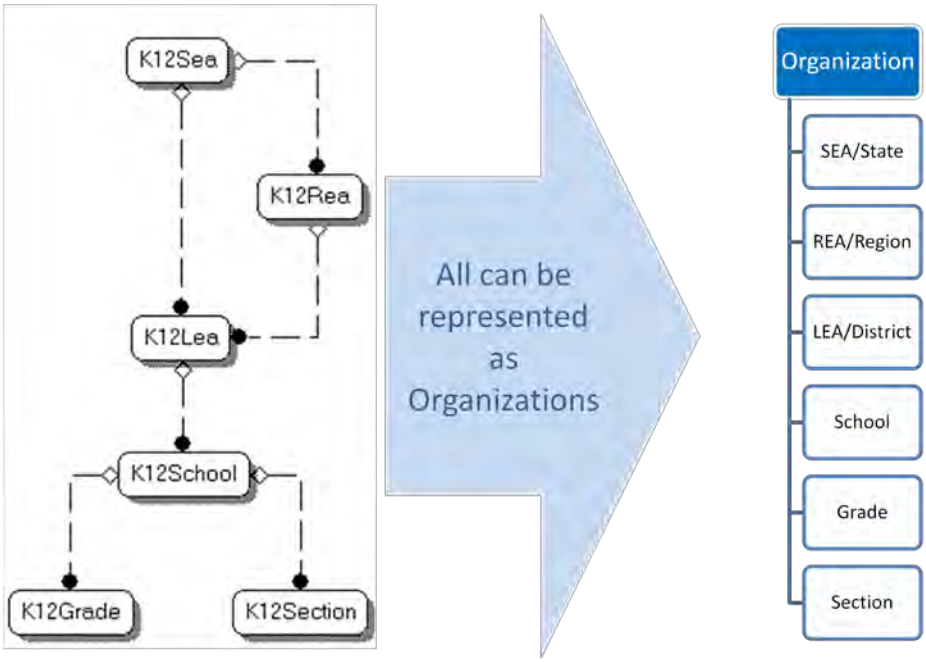
Critically, the Data Set must distinguish between two types of date and time:

- **System Date** - When did the data warehouse access and acquire the data.
- **As of Date** - When is the data about.

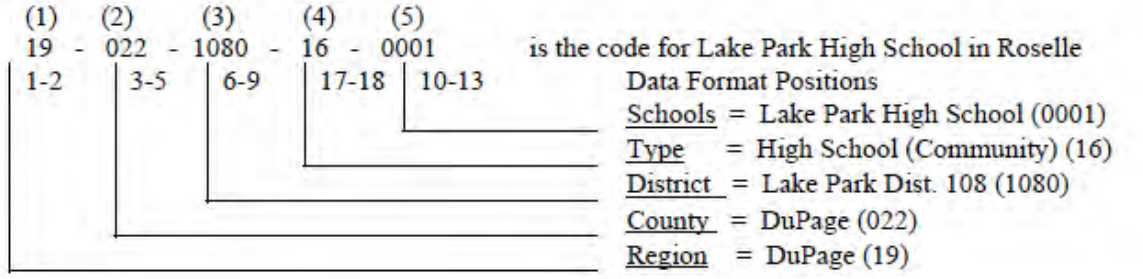
This distinction is critical to managing most official reports. While the data in the system may change every day, there are certain snapshot periods or critical annual dates such as September 30 and December 1 that are used for state and federal reports. Because the data originates in district systems and there is inherent latency as it gets uploaded, validated, and corrected in the state system, the data can never be pulled on the specific date of interest. Therefore, a second date needs to be recorded documenting the date that the data is pulled.

2. Organizations

After time, the next most central component of an education data warehouse is the directory. Organizations are entities that are not people. The most common type of organizations are public schools and local education agencies (school districts), however, there are many other types and sub-types.



Organizations have relationships to each other. The most common type of relationship is "parent" to "child." These relationships are used to roll up schools totals into districts into regions or counties. ISBE has evolved a complex system for managing the directory of organizations called "RCDTS," for the Region, County, District, Type, School codes used to identify organizations. Historically, ISBE maintained an authoritative list of organizations with RCDTS codes in a mainframe system called CDS for Central Data Store.



The practice of embedding information about the organization in the organizations identifier **is now known to be a problematic practice** based on outdated information management practices and must continue to be addressed in all ISBE systems.

Fortunately, ISBE has developed a new system for properly managing organization directory information called "EPS" for Entity Profile System. This new system is now the new authoritative source for updated CDS files and is built with proper normalization rules for data management. Each organization now has a unique, consistent EPS ID, which does not change, even if its region or county changes.

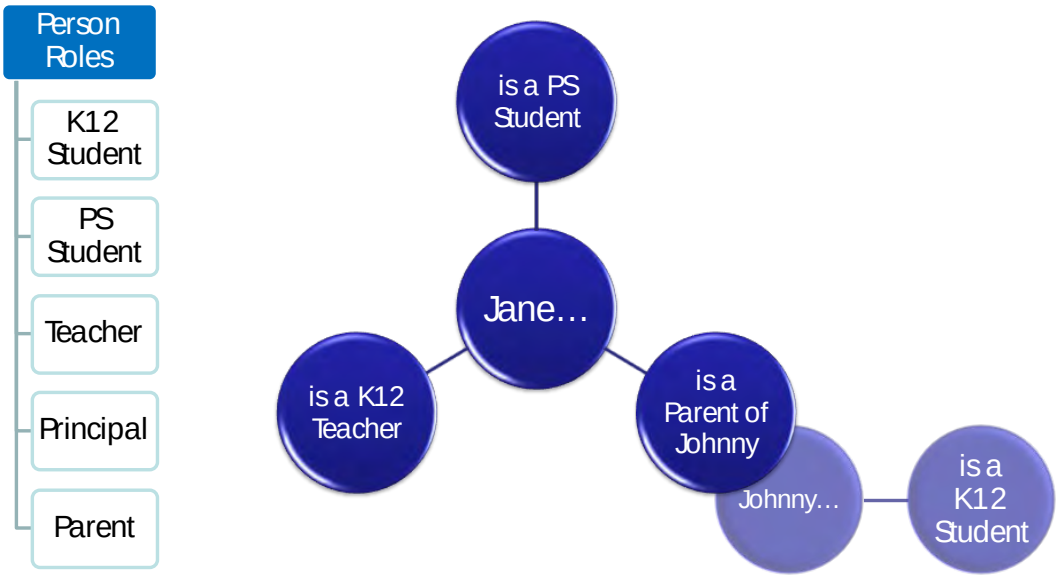
3. People

A requirement of the ILDS Data Warehouse is that people must remain consistent, despite varying roles and relationships with organizations. At any one point in time, Jane could be:

- A teacher in a k12 school
- A parent of a student named Johnny

- A student herself in a post secondary institution.

Over time, these complex relationships become common. The ISBE Data Warehouse must contain an integrated, current view of each person, drawn over time from early childhood, K-12, post-secondary, and workforce sources.



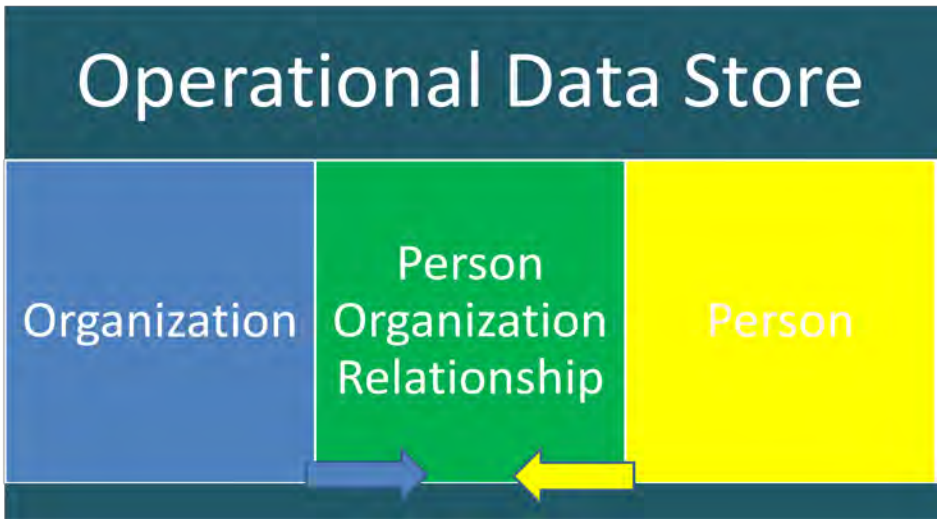
4. *People-Organization Relationships*

The fourth core component of the ILDS DW will contain a greater volume of data then all the others combined. It will hold a standard representation of each change in relationship between a Person and an Organization. Examples of these relationships include every time a student enrolls in a school or changes grades over the summer, or every time a teacher changes assignments within a district. And, significantly, once ISBE's SIS rolls out to the classroom over the next 2-3 years, approximately 20,000,000 records a year recording changes in student class section enrollment and teacher class section assignments.

In addition to storing the relationship between people and traditional organizations, it must also hold the relationship between other groups of people used for counting at particular dates for state and Federal reporting. These "programs include:

- Special Education
- Free and Reduced Lunch
- Tile I – Students in Poverty
- Title III – English Language Learners
- Perkins - Career Technical Education
- McKinney –Vento -Homeless
- Migrant
- Neglected and Delinquent
- Gifted and Talented
- 504

This Person-Organization Relationship must be the central component to the more normalized, "operational" portion of the data warehouse.



Most importantly, each change in relationship between a person and organization must record a single start date and, if applicable, end date. This subject establishes a common time dimension and is essential for creating proper snapshots of data at particular "as of" dates to fulfill state and Federal reporting.

5. Standards & Assessments

The last two subjects are not central to the model, but are sufficiently important to warrant their own subjects. The first is Standards and Assessments. These entities have relationships to both People and Organizations.
They include:

- Assessments
- Assessment Result Sets (Student Scores)
- Learning Standards.

While ISBE may currently not have needs to store overly complex assessment information, it is expected that Illinois's participation as a governing member of the PARCC assessment consortium will require more complex assessment data structures and maps to the Common Core academic standards.

6. Events and Indicators

(Incidents, Special Education events, Attendance)
The final subject area contains a set of topics with a common relationship to time. In general events happen to individuals on a particular day and include:

- Special Education
  - Referral
  - Evaluation
  - Determination
  - Placement
  - Services
  - Annual Review

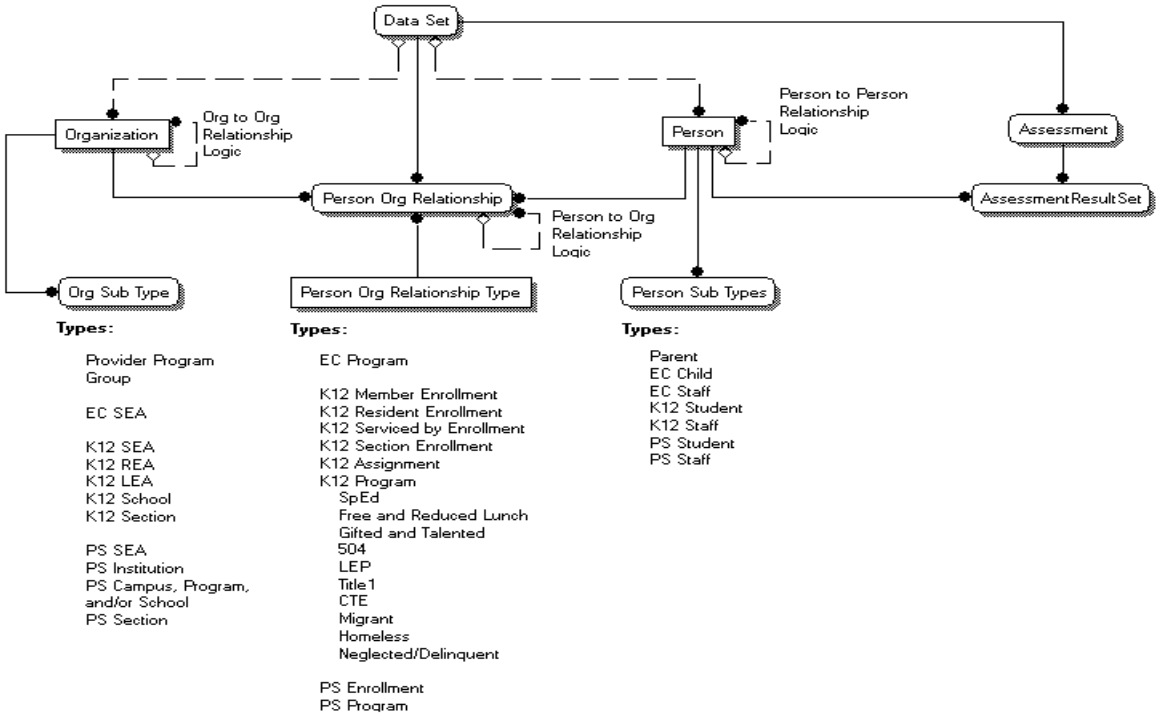
    - 3-Year Review
- Discipline Incidents
    - Suspensions
    - Expulsions
    - Weapons
- Attendance
    - Daily
    - Period

Indicators tend to be associated with organizations for a period of time (such as a school year). Organization indicators can cover a wide range of topics such as:

- Key Performance Indicators
    - Median Student Growth Percentile
    - NGA Graduation Rate
    - Chronic Absence Rate
- Financial Indicators
    - Total Revenues by Category
    - Total Expenditures by Category

Relationships Between Subjects

As important as the subjects are, so is the relationship between them. The conceptual model below shows the relationship between the primary subjects and sub-types. These relationships will be developed in subsequent deliverables to the project.



IV. DOCUMENTATION OF EXISTING SYSTEMS

Overview of methodology

Working with the ISBE ILDS project resources, PCG held discussions with key stakeholders, source system owners, subject matter experts, business users, and technical staff and performed analysis and research to identify the information that will contribute to ISBE's goals for the ILDS data architecture. Through these discussions and analysis of systems targeted for the ILDS Project, PCG:

- Identified systems that will be included in the ILDS data architecture;
- Identified what data and reporting practices are to be mapped and included in the ILDS data warehouse;
- Defined what subject areas are to be included for mapping that supports the transfer of course information and transcript data;
- Identified the composition of the information that will populate the Electronic Data Exchange Network (EDEN)/EDFacts data mart; and
- Identified what Schools Interoperability Framework (SIF) transaction sets are to be defined for the ILDS to support the exchange of transcript data.

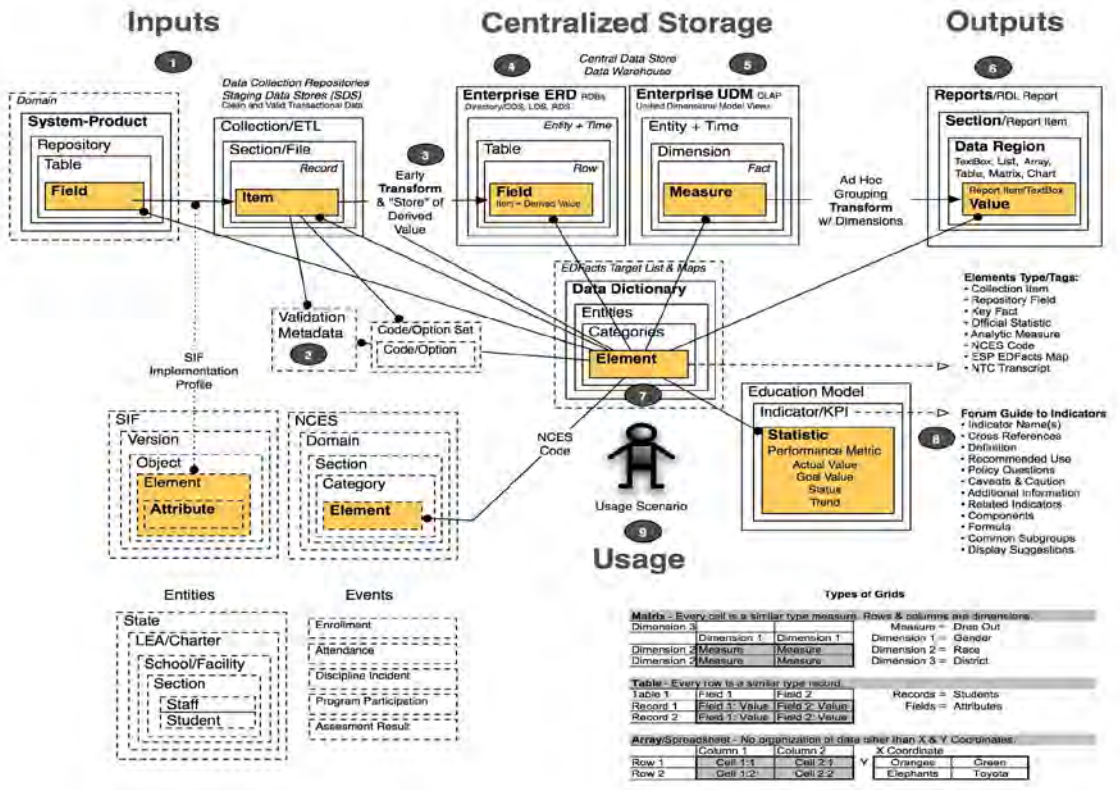
This information was compiled into a set of ILDS data architecture requirements that provides the basis for development of the Data Architecture System Design and Data Architecture Detailed Design deliverables.

The ILDS Data Architecture Requirements Deliverable captures and organizes the requirements and supports confirmation by ISBE of the content and make-up of the data architecture.

Activities Completed

The PCG Metadata Methodology uses a Microsoft Excel data audit template designed to capture the appropriate people, systems, collections, items, and data elements necessary for the gap analysis. The *ILDS Workbook* provided a generalized framework for the data audit process that was adapted to suit the priorities of ISBE. The ultimate goal is to produce a normative list of data elements, or data dictionary that can be used to perform multiple analyses.

Figure 1. PCG Metadata Methodology



Our Metadata Methodology involves three distinct steps: discovery; source detail documentation; and mapping, gap analysis, and Extract Transform, and Load (ETL). Each step utilizes different worksheets in the ILDS Workbook, building a tool that guides development of a data architecture.

Discovery involves identifying people, sources, and artifacts. During this process, PCG interviewed core contacts to discover sources and reports, additional subject matter experts, program or data systems contacts, and collected and reviewed artifacts. The discovery process, while the first step in the methodology is an ongoing process – an interview with a subject matter expert for one system may point to additional systems to review or additional contacts to interview.

- **Identify People** – The proper identification of data sources throughout the agency, and associated stakeholders, starts with people. This section of the workbook is a reference for contacting individuals who serve as data stewards, subject matter experts, or technical contacts.
- **Conduct Interviews** – The primary purpose of the interview process is to identify all authoritative data sources. By talking to the technical and business resources, we then identified additional people, systems, and data collections that are documented in the Metadata Workbook.
- **Document Data Sources** – In order to drive toward a list of distinct data elements, the data sources must be identified. A necessary step is to document the systems, collections, reports, and assessments. The *Sources* tab in the workbook not only identifies individual systems but lists business and technical resources in relation to those systems.

- **Collect Artifacts** – During the discovery process, contacts often provide resources and documentation for sources or reports. PCG collects and reviews these artifacts, often using them as context or guidance when documenting items from data sources.

Source Detail Documentation is the process of documenting the table and field information from each identified source. Much of the documentation comes from interviews with technical contacts that are able to provide detail on the technical name of the source, table and field names, and context to whether the source tables are relevant. This section of the workbook also stores information on sources that are determined to be out of immediate scope for the warehouse ("metadata only") and is intended to be updated on a regular basis by the ISBE data stewards.

- **Document Items** – Assemble a granular list of items collected via data sources and field names in tables. Since this step can produce an overwhelming amount of detailed content, care should be given to prioritize efforts to focus on items with value to reporting.

Mapping, Gap Analysis and ETL is the final step in the PCG Metadata Methodology and establishes the data dictionary and fixed position maps. Following discovery and documentation, a data dictionary is created, providing detailed information on each data item or attribute including name, definition, data type, and acceptable values. This data dictionary will then be mapped to NEDM and the P20 State Core Data Model. Fixed position mapping occurs to both the relational data store and the operational data store, allowing for a gap analysis to be performed that identifies needed data elements with levels of justification for inclusion. Transformed values are stored in the Data Dictionary with transformation rules establishing the relationship between derived data and more granular sources.

PCG utilized Microsoft® Excel 2007 to capture and maintain metadata. When not held in person, WebEx is typically used to perform interviews and allows ISBE staff to see the ILDS Workbook as manipulated by the PCG interviewer.

Identifying Source Systems and Reports

The following tables detail the source systems identified by ISBE in the RFSP and those identified by PCG during the discovery process. As an outcome of the methodology, sources were clarified, new systems were identified, and some sources and reports were removed from the scope of Phase I and II. Sources are defined as "In" or "Out" of the Original RFSP Scope and as "Phase I, II, or III" or "Metadata Only" in the Data Warehouse Scope. These distinctions justify a source's inclusion in the data warehouse or intention of inclusion in future phases of the data warehouse.

ISBE initially identified 31 source systems and through the interview process, PCG unearthed 35 more, for a total of 66 different source systems. Many systems discovered by PCG were determined to have metadata in the data warehouse only, meaning the metadata on these systems would be maintained by the data stewards, but the items would not be included in the ILDS data dictionary. Some of the systems initially identified by ISBE were also determined to be metadata only. PCG identified 25 systems as Phase I or II – 19 initially identified by ISBE and 6 additional systems that were discovered. Table B, below, lists those systems identified as Phase I or Phase II.

Phase I or II indicates that every table and field in that source should be replicated or viewed in the staging area and that some elements will be promoted into the core data warehouse. Metadata only indicates that the source description and, if possible, source detail, should be maintained by data

stewards as part of the metadata management process, but data need not be moved into the staging data store or data warehouse core.

PCG's process for identifying additional systems stemmed from the interviews with ILDS staff. Often, program staff would identify a source or report that was frequently used that was not in the original RFSP scope. PCG, with the guidance of the ILDS project manager, determined whether these sources were necessary for inclusion in the data dictionary.

Table A. Original RFSP Scope

Original Scope	DW Scope	Repository Name
In	Phase I	Annual Financial Report
In	Phase I	Annual Report of the Budget
In	metadata only	Annual Statistical Report
In	metadata only	Application and Claim Entry System
In	Phase I	Bilingual Education Program Delivery Reports
In	Phase I	Child Nutrition System
In	Phase I	Education Data Exchange Network
In	metadata only	Educator Certification System
In	metadata only	Educator Supply and Demand Report
In	Phase I (Partial)	Electronic Grants Management System
In	Phase I	Facilities and Inventory
In	Phase III	Financial Reimbursement Information System
In	Phase I	General State Aid
In	metadata only	Illinois Purchased Care Review Board System
In	Phase I	eReport Card
In	Deprecated to SIS: CTE	Illinois Student Information System
In	metadata only	Management Information Database Accounting System
In	Phase I	Non-Public School Registration, Enrollment and Staff Report
In	Deprecated to SIS: CTE	Performance Management Information System
In	Deprecated to SIS: CTE	Planning (PAS – Program Approval System)
In	Phase I	Pre K At Risk and Preschool for All Program Record
In	metadata only	Professional Development Provider System
In	Phase I	Reduction in Force Survey
In	Phase I	Regional Safe Schools Program
In	metadata only	Special Education Data System
In	Phase I	Special Education Systems, Approval and Reimbursement System
In	Phase I	Student Information System
In	Phase I	Teacher Certification Information System
In	Phase I	Teacher Service Record
In	Phase I	The Funding and Child Tracking System
In	Phase I	Truants Alternative & Optional Education Program

Table B. Data Warehouse Scope

Original Scope	DW Scope	Repository Name
In	Phase I	Annual Financial Report
In	Phase I	Annual Report of the Budget
In	Phase I	Bilingual Education Program Delivery Reports
In	Phase I	Child Nutrition Services
In	Phase I	Education Data Exchange Network

Original Scope	DW Scope	Repository Name
In	Phase I	Facilities and Inventory
In	Phase I	General State Aid
In	Phase I	eReport Card
In	Phase III	Management Information Database Accounting System
In	Phase I	Non-Public School Registration, Enrollment and Staff Report
In	Phase I	Pre K At Risk and Preschool for All Program Record
In	Phase I	Reduction in Force Survey
In	Phase I	Regional Safe Schools Program
In	Phase I	Special Education Systems, Approval and Reimbursement System
In	Phase III	Special Education Data System
In	Phase I	Student Information System
In	Phase I	Teacher Certification Information System
In	Phase I	Teacher Service Record
In	Phase I	The Funding and Child Tracking System
In	Phase I	Truants Alternative & Optional Education Program
Out	Phase I	End of Year Report
Out	Phase I	Entity Profile System
Out	Phase I	Shuwan School Report Card File
Out	Phase I	Assessment Score File
In	Phase I (Partial)	Electronic Grants Management System
Out	Phase I and II	SIS: Course Classification
Out	Phase II	SIS: Section Enrollment
In	Phase III	Financial Reimbursement Information System

Source Detail Information

From the 66 data systems, source detail information was collected from 24 and included in the ILDS workbook. Each source system provided database, table, and field name; data type; and size of data. Source system owners provided a description of each table and information on whether the table was fact (contained data) or dimensional (look-up tables). From these 24 source systems, there were 30 databases, 2082 tables, and 44815 fields.

Reports

In addition to analysis performed for data systems, interviews and analysis was also performed for the set of reports targeted in the RFSP. Often, program staff would identify a report that was frequently used that was not in the original RFSP scope. PCG, with the guidance of the ILDS project manager, determined whether these reports were targeted for inclusion in the data dictionary.

Table C. Data Architecture Reports

Original Scope	DW Scope	Report Name
In	Phase I	Annual School Report Card
In	Phase I and II	Federal Career and Technical Education
In	Phase I	Bilingual Education Reports
In	Phase I	Regional Safe Schools
In	Phase I	Truants Alternative & Optional Education Program
In	Phase I	Child Nutrition Services
In	Metadata only	Federal Special Education – Annual Performance Report, Part B

Original Scope	DW Scope	Report Name
In	Phase I	Biennial EEO-5
In	Phase I	District Special Education Profile
In	Phase I	Teacher Reduction
In	Metadata only	Educator Supply and Demand
In	Phase I	Pre K At Risk
In	Phase I	Annual Report of the Budget
In	Phase I	General State Aid
In	Phase I	Annual Statistical Report
In	Phase I	Education Data Exchange Network (EDEN)
In	Phase I	Consolidated State Performance Report (CSPR)
Out	Phase I	Early Childhood Prevention Initiative Program Evaluation Reports
Out	Phase I and II	CTE Report Cards
Out	Metadata only	Suspension, Expulsion, Graduation reports
Out	Metadata only	Bi-Annual Required Report - early childhood prevention initiative program report
Out	Metadata only	Consolidated Annual Report
Out	Phase I	Crystal Reports -- SIS
Out	Metadata only	Directory of Educational Entities
Out	Phase I	District Special Education Profile
		Indicator 12 - Dept of Human Services
Out	Phase I	End of Year Report Dropouts, Truants, Suspensions
Out	Phase I	General State Aid
Out	Metadata only	High School Feedback Report
Out	Metadata only	List of valid data submitters
Out	Phase I	Registered and Recognized Elementary/Secondary Schools
Out	Metadata only	Statistical & Evaluation Reporting
Out	Meta data only	Teacher Salary Study, report
Out	Phase I	Transaction Log
		Statistics of schools(counts)
		List of magnet schools
Out	Phase I	Preventive Initiative
Out	Metadata only	web-based reports
Out	Metadata only	web-based SIRS system - reports

People

Over the course of the discovery and documentation process, PCG interviewed 52 ISBE contacts from the program and data systems sides. Often a staff member was responsible for more than one system, and we met with these staff on several occasions. Most interviews involved an initial meeting that was followed by discussions with data systems staff. More detailed sources, like SIS and the special education systems, involved several interviews. PCG used the *People* tab in the ILDS Workbook to keep track of contacts and identify new contacts.

Table D. People Interviewed

Name	Office	Program or Data Systems
Craig Allen	• Truants Alternative & Optional Education Program	Data Systems
Janet Allison	• Electronic Grants Management System	Program
Jennifer Andruskevitch	• Special Education DS	Consultant
Shafiqul Azam	• Student Health – Dental, Immunization, Vision • Annual Statistical Report • Noncertified Staff Salary Study • Non-Public School Registration, Enrollment and Staff Report	Program
Marge Beck	• Management Information Database Accounting System • Financial Reimbursement Information System	Program
Scott Beever	• FACTS, SEARS	Program
Krishna Brahmamdam	• Illinois Purchased Care Review Board System	Data Systems
Carol Brooks	• CTE Programs	Program
Niann Chern	• End of Year • Reduction in Force • School Incident Reporting System • High School Students Taking Community College Classes	Program
Shuwan Chiu	• Annual School Report card • Assessment Score File	Program
Prathebha Damadoran	• Teacher Service Record • Pre K At Risk Program • Teacher Certification Information System	Data Systems
Ray Denoyer	• EPS-Entity System	Data Systems
Kalpana Desai	• Enrollment and Staff Report (Non-Public Fall Housing) • Pre K At Risk Program • Early Childhood Parent	Program
Durga Gorantla	• eReport Card • Facilities and Inventory • Student Health – Dental, Immunization, Vision	Data Systems
Brent Engelman	• SEARS • FACTS	Data Systems
Jodi Fleck	• SEARS	Program
Bill Foard	• EDEN/EDFacts	Data Systems
Natalia Foard	• TAOEP, RSSP • Regional Safe Schools Program	Data Systems
Lilibeth Gumia	• Truants Alternative & Optional Education Program • Regional Safe Schools Program • Bilingual Education Program	Program

Name	Office	Program or Data Systems
Jason Hall	• General State Aid Report	Program
Howard Hammel	• SIS	Project Manager for SIS (IBM)
Debbie Hemberger	• Annual Financial Report	Program
Alan Hinrichs	• SIS	Data Systems
Mark Hobneck	• TCIS	Program
Brian Holdridge	• FRIS	Data Systems
Tim Imler	• eGMS • MIDAS • FRIS • PCRB	Program
Linda Jamali	• ECS TCIS	Program
Gayle Johnson	• Data Analysis and Progress Reporting	Program
Kim Lewis	• MIDAS • FRIS	Program
Shane Lively	• Database Administrator	Data Systems
Tony Meyer	• General State Aid Report	Data Systems
Becky McFall	• Non-Public School Registration • Non certified staff • Bilingual Program	Data Systems
Jon Nordstrom	• eGMS	Data Systems
Scott Norton	• Technology Support Division EPS	Program
Brian Roberts	• eGMS • EDEN	Consultant
Donna Schertz	• SEDS	Program
Deb Scheiter	• Early Childhood, eGMS	Program
John Shake	• Data Systems Division CNS	Data Systems
Shangte Shen	• CTE Analyst	Program
Tim Simmons	• Certification Systems • TSR • TCIS	Data Systems
Warren Summers	• Data Systems Division	Data Systems
Jim Sweeney	• SIS • Unfilled Positions • EPS	Program
Mark Taylor	• Annual Financial Report	Data Systems
Debbie Trueblood	• Data Steward	Program
Brenda Umek	• Data Steward	Program
Debbie Vespa	• Fiscal Support Services	Program
Dhiren Vyas	• SEDS technical	Data Systems
Dora Welker	• CTE Programs	Program
Gwen Williams	• Special Education	Program

Name	Office	Program or Data Systems
Mark Williams	• Educational Programs	Program
Richard Yong	• Teacher Salary Study	Program
	• Title 1 Status Survey	

V. SECURITY AND CONFIDENTIALITY REQUIREMENTS

FERPA and HIPPA

Two federal statutes authorize and restrict data sharing:

***FEDERAL EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA) CITATION*: (**34 CFR 99)

The FERPA regulations (34 CFR Part 99) specify the standards for disclosing student information. In addition advisory letters have been published by the U.S. Department of Education (USDE) and the Family Policy Compliance Office (FPCO) within USDE. Education records are created and maintained by elementary and secondary schools, called local education agencies (LEA), and post-secondary education institutions (colleges and universities) where students are or have been in attendance. For student-specific reports, the best way to avoid the potential for violations of the FERPA consent requirement is for the education agency or institution to obtain written consent from the parents or eligible students prior to disclosing personally identifiable information contained in the students' education records. Parental consent may be obtained by agencies other than the education agency. For instance, the Department of Labor may obtain consent from individuals at the time the individuals apply for employment assistance. The consent form must specifically state that the individual gives consent for the education agency to release information contained in the individual's education records to the Department of Labor and specify the purpose of the disclosure. The consent must be dated and signed by the individual.

Issues with Data Sharing. With limited exceptions, FERPA requires LEAs and institutions to obtain written consent from the parents or eligible students prior to disclosing personally identifiable information contained in students' education records. Personally identifiable information in students' education records may include students' demographics, grades, test scores, academic progress reports, disciplinary actions, and information regarding health status, disabilities and treatment.

Exceptions. FERPA regulations provide specific conditions under which prior consent is not required for disclosure of personally identifiable student information. (Please see §§ 99.31 and 99.35.) The conditions or exceptions for such non-consensual disclosure include the circumstances, below.

1. ***Directory Information.*** Information that falls within the FERPA definition of "directory information" may be disclosed without prior consent. At § 99.3, "directory information" is defined as information that would not generally be considered harmful or an invasion of privacy if disclosed. Directory information that may be disclosed without prior consent includes the student's name, date of birth, grade, address, telephone number, email address, photograph, etc. However, students' social security numbers, unique identification numbers and other personal information may not be disclosed as directory information.
2. ***LEA Disclosure to SEA***. LEAs and institutions may disclose personally identifiable student information to State education agencies (SEA) without prior written consent from the parents or eligible students if such disclosure is in connection with an audit or evaluation of federal or state supported educational programs, or the enforcement of or compliance with federal legal requirements relating to such programs. The SEA must destroy the information when it is no longer needed for the purpose for which it was disclosed. This exception allows the SEA to comply with its federal and State legislative mandates to monitor the delivery of education services. However, this exception does not provide authority for the

SEA to share with non-education agencies the personally identifiable student information it receives from the LEA.

3. ***Disclosure to School Officials with Legitimate Educational Interests***. FERPA allows education agencies and institutions to disclose personally identifiable information to other school officials within the education agency or institution whom the education agency or institution has determined to have legitimate education interests in the information. This allows disclosure to individuals within the education agency or institution, such as teachers, who need the information in order to perform their duties for the education agency or institution. The education agency or institution is responsible for determining which individuals have legitimate education interests in personally identifiable student information contained in education records. This exception does not authorize sharing student information with non-education agencies that may have legitimate educational interests.
4. ***SEA Disclosure to Its Authorized Representative***. The SEA may disclose student information without prior consent to an authorized representative of the SEA to perform activities on behalf of the SEA. An "authorized representative" of an SEA must be under the direct control of the SEA as an employee or a contractor.
5. ***SEA Disclosure for Education Research.*** An education agency or institution may disclose student information to organizations conducting research for or on behalf of the education agency to improve instruction. The SEA must be able to specify how the research will be used to improve instruction. Further, the research must be conducted in a manner that does not permit personal identification of parents and students.

Options and steps for how to proceed: The options listed below are possible methods for ISBE to share student data for the ILDS P20 Data Sharing effort. The steps below do not illustrate the sole method possible for sharing data under the current restrictions but offer examples of how the state may proceed. Additionally, the steps below might not address privacy concerns specific to the initiatives that could come from this deliverable. Steps to overcome privacy barriers may need to be taken to adjust current data sharing allowances.

- ***Option 1: Agencies May Share Individually Identifiable Information.*** The first option considers the exception above that states that directory information can be shared without the student's prior consent. Note that social security numbers cannot be shared under this option. ISBE defines directory information. Directory information is published or made available to participating agencies.

- ***Option 2: Share Data with an Authorized Representative.*** Option 2 describes methods by which SEA may disclose student information, without prior consent, to an authorized representative. An "authorized representative" of an SEA is an employee or contractor that performs duties directly on the behalf of the SEA. ISBE identifies agencies that meet the criteria of an Authorized Representative of ISBE and determines activities required of the authorize representative. ISBE drafts and implements a MOU that outlines the permissible activities of the authorized representative of ISBE and distributes to agencies that have been determined to have administrative purposes that meet the criteria of an authorized representative. When possible, ISBE should utilize existing MOUs to draft data sharing agreements.

- ***Option 3: Seek Individual Consent.*** Option 3 describes methods by which ISBE can share information with the consent of the student. ISBE would identify all Illinois public school

students, including all students enrolled in LEAs and public higher education institutions, and provide students/guardians with a consent form to release their personal information for the data interoperability effort. ISBE would work with LEAs to establish a routine consent form process. One option is to include a question on enrollment forms regarding the release of personal information for case management, program evaluation and research purposes only.

- ***Option 4: Agencies May Share Only De-Identified Student Information.*** Option 4 aligns with the exception that the SEA may disclose information to organizations conducting research. This information may not be personally identifiable. ISBE would mask the data set so it contains only de-identified data (no SSN, address, phone, parents' names, etc.). In this scenario no individual consent would be necessary.

HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT (HIPAA) (45 CFR 160 and 164)
Congress enacted the Health Insurance Portability and Accountability Act of 1996 (HIPAA) to improve the efficiency and effectiveness of the health care system, in part through the adoption of national standards for health care transactions. Recognizing that advances in electronic technology could erode the privacy of health care information, Congress mandated the adoption of Federal privacy protections for individually identifiable health information and directed the Department of Health and Human Services to promulgate comprehensive regulations protecting such information. In response to the mandate, DHHS published a final regulation (the Privacy Rule) in December, 2000, effective April, 2001, establishing national standards for protecting personally identifiable health information by "covered entities" that handle such information (45 CFR Part 160 and Subparts A and E of Part 164). The Rule set an April, 2003 compliance dates for covered entities to implement standards to protect against the misuse of individually identifiable health information. A covered entity is: a) a health care provider that conducts certain transactions in electronic form (called here a "covered health care provider"), b) a health care clearinghouse, c) a health plan. Illinois state agencies that provide health-related services and maintain health information are considered covered entities under HIPAA.

Protected Health Information The Privacy Rule protects all *"individually identifiable health information"* held or transmitted by a covered entity or its business associate, in any form or media, whether electronic, paper, or oral. The Privacy Rule calls this information "*protected health information (PHI)*."[1] *"Individually identifiable health information"* is information, including demographic data, that relates to: a) the individual's past, present or future physical or mental health or condition, b) the provision of health care to the individual, or c) the past, present, or future payment for the provision of health care to the individual, and that identifies the individual or for which there is a reasonable basis to believe it can be used to identify the individual.[2] Individually identifiable health information includes many common identifiers (e.g., name, address, birth date, Social Security Number). A covered entity may in turn disclose protected health information to another organization serving as its business associate, but *only to assist the covered entity carry out its designated health care functions and not for the business associate's independent use or purposes*. The covered entity remains responsible for compliance by its business associate with the Privacy Rule standards. However, individuals may request that the agency release their information. 45 CFR 164.508, identifies the type of health data that requires client authorization for release and describes the procedure to establish a valid authorization. Information

[1] 45 C.F.R. § 160.103.
[2] 45 C.F.R. § 160.103

required for authorization includes client name, a description of the purpose for using the information, and an expiration date when the information can no longer be shared. Also, 45 CFR 164.501 establishes that data that does not contain individually identifiable health data such as aggregate data are not protected by HIPAA.

Issues With Data Sharing. There are three main issues associated with sharing health records:

1. **Authorization**: A covered entity must obtain the individual's written authorization for any use or disclosure of protected health information that is not for treatment, payment or health care operations or otherwise permitted or required by the Privacy Rule.[3]
2. **Minimum Necessary**: A covered entity must make reasonable efforts to use, disclose, and request only the minimum amount of protected health information needed to accomplish the intended purpose of the use, disclosure, or request.[4]
3. **Disclosures and Requests for Disclosures:** Covered entities must establish and implement policies and procedures (which may be standard protocols) for *routine, recurring disclosures, or requests for disclosures,* that limit the protected health information disclosed to the minimum amount reasonably necessary to achieve the purpose of the disclosure. Individual review of each disclosure is not required.

Exceptions. A covered entity is permitted, but not required, to use and disclose protected health information, without an individual's authorization, for the following purposes or situations:

1. **To the Individual** (unless required for access or accounting of disclosures). *Example:* to contact the individual about an appointment, etc.
2. **Treatment, Payment, and Health Care Operations.** *Example:* Disclosing PHI to other MDs, insurers, billing services, in order to process payment, determine whether or not to pay for a procedure, etc.
3. **Opportunity to Agree or Object**. *Example:* An individual must have the opportunity to object to the sharing of his or her data.
4. **Incident to an otherwise permitted use and disclosure**. *Example:* Sharing data as part of the normal course of payment, insurance, including use by vendors, subcontractors.
5. **Public Interest and Benefit Activities.** *Example:* Instances where there may be a threat to public health, a need for controlling disease, injury, or disability.
6. **Limited Data Set for the purposes of research, public health or health care operations.**[5] *Example:* If a covered entity enters into an agreement with a third party for research, they must limit the content of the data set and strip specified direct identifiers of the individual or of relatives, employers, or household members of the individual. They must also prohibit the third party from re-disclosing the data, and make provisions for safeguarding it.

Options and Steps for How to Proceed. The following options discuss data sharing possibilities related to data privacy rules for agencies and programs that maintain health information. The steps below *do not* illustrate the sole method possible for sharing data under the current restrictions, but offer examples of how the state may proceed. Additionally, some of the steps below are broader than the ILDS P20 Data Sharing project goals, meaning they might not directly apply to the initiatives that could come out of this deliverable.

[3] 45 C.F.R. § 164.508.
[4] 45 C.F.R. §§ 164.502(b) and 164.514 (d).
[5] 45 C.F.R. § 164.502(a)(1).

Option 1: Agencies Will Share Individually Identifiable Information. Option 1 refers to HIPAA restrictions that only allow agencies to share data for the purpose of a designated health care function. A covered entity may in turn disclose protected health information to another organization serving as its business associate, but *only to assist the covered entity carry out its designated health care functions and not for the business associate's independent use or purposes*.
Option 2: Seek Individual Consent. Option 2 refers to 45 CFR 164.508, which enables individuals to give their consent to release their personal information.
Option 3: Agencies May Share Only De-Identified[6] Health Information . Option 3 is allowed under 45 CFR 164.501 which states that health information may be shared in the aggregate. The entity would mask the data set so it contains only de-identified data (no SSN, address, phone, parents' names, etc.). No individual consent necessary.

Implications for ILDS

In general, ISBE and district staff with "a legitimate educational interest," have a right to see complete student-level for all students currently enrolled in their organization (i.e. principal in school, teacher in section). The following is a test case that directs the SEA to establish governing policies surrounding the use and sharing of ILDS data.

Test Case: National Student Clearinghouse

- *PS Institutions send files to NSC as an authorized representative of the institution for the purposes of confirming financial aid.*
- *NSC shares individual student data with high schools who demonstrate a legitimate education interest.*

What is ISBE's interpretation of these issues for the high school feedback report?

Does ISBE consider district staff as having legitimate education interests in students who were once, but are no longer enrolled with them?

Do all ISBE employees, regardless of organizational unit or level, have a potential legitimate education interest and subsequent authorization to access the ILDS data?

Based on existing statues and data sharing agreements ISBE believes:

- District superintendent and designees can access record level data about students no longer enrolled;
- ISBE staff designated by the state superintendant can access record level data so long as such access is restricted to legitimate educational interest.

[6] De-identified data: Includes any information that does not identify an individual and from which a person's identity cannot be reasonably deduced. Information considered to be identifiable includes: names, all elements of dates, telephone numbers, emails, fax numbers, medical record numbers, health plan beneficiary numbers, biometric identifiers, social security numbers, account numbers, certificate/license numbers, vehicle identification numbers, biometric identifiers, and full face photographs. 45 CFR Parts 160, 162, and 164.

APPENDICES

Appendix A: Additional Requirements

Appendix A contains requirements gathered from stakeholder groups, such as the ILDS Data Advisory Committee, teacher and principal focus groups, or from SLDS grants or the P-20 Act. Frequently these requirements do not align with the collection of an individual data element, but are tracked by the ILDS project to inform the stakeholder community of the disposition of the requirement.

- **DW Phase** indicates what phase of engineering and construction is envisioned for this requirement.
- **ISBE Y/N** indicates whether ISBE currently collects or is planning to collect data that would address the requirement.
- **RDS Y/N** indicates inclusion in the Reporting Data Store (RDS). The RDS represents a snapshot of data that aligns with the common core model and supports comparability between statewide education entities. Elements that are marked "N" may be included in the ILDS repository, but may not be stored in a format that supports comparability or interchangeability with other education entities.

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
The DW will be the single source for all EDFacts reporting	1		Y	y
A policy matrix will define access levels in accordance with FERPA.	1		y	NA
Staff pre-service information will be added.	2		N	N
Statewide course classification starting with CTE courses is rolling out.	1		Y	Y
Users will be able to access student level data	1		Y	Y
The DW will provide a public web interface	1		Y	Y
The DW will be the source for research and reports to legislature	1		Y	Y
Unique statewide student ID will be provided to institutions of higher learning	1		Y	NA
Elementary and secondary test records will be matched from year to year	1		Y	Y
The DW will allow stakeholders to track student growth	1		Y	Y
DW will display information at the individual level to fulfill data requests.	1		y	NA
DW will link data to instructional management tools	1		Y	NA
Data from charter schools with more than one campus will be collected in a way that supports the disaggregation of the data by campus site	1		Y	Y
The DW will integrate data from early learning through postsecondary education	1		N	Y
The DW will integrate data from multiple student unit records systems	1		Y	NA
The DW will contain a unique statewide student identifier that connects student data across key databases across years	1		Y	Y
The DW will contain student-level enrollment, demographic and program participation information	1		Y	Y
The DW will be able to match individual students' test records from year to year to measure academic growth	1		Y	Y

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
The DW will contain information on untested students and the reasons they were not tested	1		Y	Y
The DW will contain student-level college readiness test scores	1		Y	Y
The DW will contain student-level graduation and dropout data	1		Y	Y
Student-level information about the points at which students exit, transfer in, transfer out, drop out, or complete P-16 education programs will be added	1		Y	Y
The DW will provide the capacity for P-12 systems to communicate with higher education data systems	1		Y	Y
Yearly test records of individual students with respect to assessments under section 1111(b) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6311(b)) will be added	1		Y	Y
Should take into account national models (NEDM) and other State data models	1		NA	Y
Include ISBE data…	NA		Y	Y
The Data Architecture Data Dictionary should include Field definitions, Field edits, Domain values, Field constraints, Field attributes	1		Y	NA
Establish standard data definitions that align ISBE data elements with federal reporting data elements	1		Y	NA
The DW will support Consolidated State Performance Reporting (CSPR)	1		Y	Y
Define longitudinal data	1		Y	Y
The DW will identify data transaction sets to support School Interoperability Framework (SIF) vertical reporting within LEAs and postsecondary education partners	1		Y	NA
DW will be informed by a gap analysis between ISBE systems and data collection practices and the National Education Data Model (NEDM)	1		Y	NA
Implement the tools and procedures that support the viewing, maintenance, and updating of the ISBE data architecture	1		Y	NA
DW will be informed by Data Architecture mapping of the Illinois Student Information System (ISIS)	1		Y	NA
DW will be informed by Data Architecture mapping of the Student Information System (SIS)	1		Y	NA
DW will be informed by Data Architecture mapping of the Special Education Systems, Approval and Reimbursement System (SEARS)	1		Y	NA
DW will be informed by Data Architecture mapping of the The Funding and Child Tracking System (FACTS)	1		Y	NA
DW will be informed by Data Architecture mapping of the Annual Financial Report (AFR)	1		Y	NA
DW will be informed by Data Architecture mapping of the Child Nutrition System (CNS) and Application and Claim Entry System (ACES)	1		y	NA
DW will be informed by Data Architecture mapping of the Teacher Certification Information System (TCIS)	1		Y	NA
DW will be informed by Data Architecture mapping of the Teacher Service Record System (TSR)	1		Y	NA
DW will be informed by Data Architecture mapping of the Electronic Grants Management System	1		Y	NA

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
(eGMS)				
DW will be informed by Data Architecture mapping of the Special Education Data System (SEDS)	1		Y	NA
DW will be informed by Data Architecture mapping of the Financial Reimbursement Information System (FRIS)	1		Y	NA
DW will be informed by Data Architecture mapping of the Management Information Database Accounting System (MIDAS)	1		Y	NA
DW will be informed by Data Architecture mapping of the Non-Public Registration, Enrollment and Staff Report (Non-Public Fall Housing)	1		Y	NA
DW will be informed by Data Architecture mapping of the Facilities and Inventory	1		Y	NA
DW will be informed by Data Architecture mapping of the Annual School Report Card reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Federal Career and Technical Education reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Bilingual Education Reports	1		Y	NA
DW will be informed by Data Architecture mapping of the Regional Safe Schools and Truants Alternative & Optional Education Program reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Child Nutrition Services reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Federal Special Education – Annual Performance Report, Part B reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Biennial EEO-5 (a report containing race/ethnicity and gender information about certified and non-certified staff) reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the District Special Education Profile reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Teacher Reduction reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Educator Supply and Demand reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Pre K At Risk reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Annual Report of the Budget	1		Y	NA
DW will be informed by Data Architecture mapping of the General State Aid reporting	1		Y	NA
DW will be informed by Data Architecture mapping of the Annual Statistics Report	1		Y	NA
DW will be informed by Data Architecture mapping of the Education Data Exchange Network (EDEN)	1		Y	NA
DW will be informed by Data Architecture mapping of the Consolidated State Performance Report (CSPR)	1		Y	NA
Data Architecture System Design - NEDM Gap Analysis	1		Y	NA
Data Architecture System Design - Conceptual Data Model	1		Y	NA
Data Architecture System Design - LDS Logical Data Model including Longitudinal data structures	1		Y	NA
Data Architecture System Design - LDS Federal (EDEN, CSPR) Data Mart Logical Data Model	1		Y	NA

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
Data Architecture System Design - LDS Operational Data Logical Data Model	1		Y	NA
Education Enterprise Metadata – ISBE requires the identification and establishment of the metadata that will be used to define an Illinois education enterprise-wide data architecture. The metadata repository must include: § Business/guide information used to search and locate an object and/or data element such as student, teacher, school, or course, and provide the foundation for reporting and business intelligence systems and the data warehouse; § Technical/structural information used to describe the structure of computer systems such as files, tables, columns, and indexes; and, § Administrative metadata information that supports rights management metadata and preservation metadata definitions, critical to meeting Family Education Rights and Privacy Act (FERPA) and the Illinois School Student Records Act (ISSRA) requirements. Metadata must be easily browsed by end users and power users via client/server and/or Web connections. The metadata and metadata repository should: § Include information on data: o Currency, o Verification and lineage, o Value set, and o Continuity; § Support metadata standards, including OLE DB for OLAP; § Be capable of supporting versioning of the metadata to coincide with system changes; and § Provide the capability to expand the metadata model for use in ETL processes, support integration with ETL tooling, and be expandable to support the ability to generate, manage, and maintain a central metadata repository that contains: o Source data definitions, o Target data definitions, o Transformation rules, and o Derived computations.	1		Y	NA
Data Architecture System Design - Data Architecture Display tool	1	Future tool	Y	NA
Data Architecture Detailed Design - Data Architecture Data Dictionary	1		Y	NA
Data Architecture Detailed Design - Data Architecture Data Dictionary that includes§ Business rules; § Standard definitions and data objects, formats, naming conventions, rules of interaction between applications, and includes identification of the system of record to help reduce data redundancy; § Data source identification;	1		Y	NA

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
§ Field definitions, attributes, and constraints; § Field edits; § Domain values - school, LEA, state education agency (SEA), student, and staff; § Indication of data elements that are required or used for federal reporting; and § Indication of data elements that are part of the National Center for Education Statistics or SIF data elements and associated characteristics				
Data Architecture Detailed Design - Web enabled access to model information, including display, reporting, and search capabilities	1		Y	NA
Data Architecture Detailed Design - mapping of ISBE data elements to the National Education Data Model	1		Y	NA
Data Architecture Detailed Design - Data Dictionary modular enough to allow for business rule updating (e.g., field data code changes, field format changes, field additions/deletions, dependencies between fields) by ISBE resources without major re-programming efforts	1		Y	NA
Data Architecture Detailed Design - Data Dictionary mapping of ISBE data that identifies what areas and data elements will support SIF transaction sets	1		Y	NA
Data Architecture Detailed Design - Data Dictionary mapping of ISBE data that includes a SIF code column in the model and a facility is to be provided that crosswalks legacy values with the SIF values	1		NA	NA
Data Architecture Detailed Design - Data Dictionary mapping of ISBE data that defines what subject areas are to be included for mapping that supports the transfer of course information and transcript data	1		Y	NA
Data Architecture Data Model Display Tool Web Implementation	1		NA	NA
Data Architecture Mapping to ISBE Applications and SIS Systems	1		Y	NA
Data Architecture Interface Definitions	1		Y	NA
Data Architecture - include the ability to capture audit trails, changes to the data model, and include logical data structures for the capture of audit information for the ILDS data warehouse	1		Y	NA
Data Architecture - include definitions of SIF interchanges with SIF enabled LEAs, including a SIF interchange definition for transcript data	1		Y	NA
Data Architecture - Linking transactions defined to support interoperability with postsecondary and employment data including support for the linking of ISBE data with postsecondary data through the ISBE SIS assigned student identifier (SID)	1		Y	NA
Collect administrator contact information	1		N	Y
Indicate trends in data	1		NA	NA
Collect homeless data by individual	1		Y	Y
Display data using graphics	1		NA	NA

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
Improve forecasting for need-based grant programs: number of students on free and reduced price lunch option	1		Y	Y
Improve forecasting for need-based grant programs: college remedial course work	3		N	N
Improve forecasting for need-based grant programs: college majors	3		N	N
Improve forecasting for need-based grant programs: number of hours working each week	3		N	N
Facilitate program evaluation: graduation data for all Illinois postsecondary schools	1		N	Y
Collect data to see if students exceeding minimum HS graduation requirements are more likely to graduate from college / help evaluate KH2GoI and Corps programs: race/ethnicity and participation in free and reduced lunch program	2		N	Y
Connect ISAC S&G database with others in ILDS: unique student identifier to be used K-20 and beyond	1		N	N
What were graduates doing at periodic intervals after graduation?	3		N	N
At what point did they leave school?	3		N	Y
How many obtained a GED? After how many years?	3	Data collected by ICCB	N	Y
What does data show us regarding expenditures for early childhood programs? How does it affect student achievement?	2		Y	N
What data can you show that our expenditures for all-day kindergarten are making a difference in short and long-term academic achievement?	1		Y	N
What data do we have that the expenditures for the middle school concept are making a difference in academic achievement for our middle school students? (Reading scores go down between 5th and 8th grades – no one knows why – what's wrong?)	1		Y	N
What data do we have that expenditures in our career and technical programs are having an effect on student achievement?	1		Y	N
Need data to be comparable by Senate/House district and regionally (Chicago, Cook County not in Chicago, collar counties, and downstate).	1		Y	Y
How individual school districts fare under various funding proposals	1		Y	Y
How low-income children in their district perform in comparison with low-income children in other districts	1		Y	Y
Funding levels	1		Y	Y
Data sharing agreements with employment and workforce development agencies, and establish procedures and systems to evaluate the relationship between education programs and outcomes and employment fields, employment locations, and employment outcomes	3	Future consideration	N	Y
Linking integration of data with postsecondary and employment data, other agencies and organizations	1&2		N	Y
SIS will be expanded to include section entrance/exit.	2		N	Y

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
Staff pre-service information will be added.	2		N	N
Teacher evaluation information will be collected.	3	Future consideration	N	N
ISBE and the IL Student Assistance Commission (ISAC) have a MoU to put in place a statewide transcript system. ISAC has issued an RFSP without ISBE involvement. With the DW Expansion grant a new understanding will generate a new MoU will be revised to use ILDS to collect transcript data through SIF and other sources. 3rd party transcript broker is left to ISAC and local.	2		N	Y
Collect attendance data at the individual student level	2		N	N
GPA data will be added to the enterprise data warehouse	2		N	Y
Collect teacher attendance data	3		N	N
Collect and display IEP data at the individual level	3		N	Y
Collect parent contact information (phone, email)	3		N	N
Collect counselor contact information	3		y	N
Collect administrator contact information	3		Y	Y
Collect standardized test reports, and display at the individual, detailed level to support targeted instruction	2 -3		Y	Y
Link curriculum to test scores, at the detailed level	3		N	N
Collect and display individual discipline data	3	Current practice prohibits the long-term capture of discipline data	N	Y
Collect all services received by students, including social work/504 services and accommodations	3		N	N
Collect and display reading level data at detailed level	1		N	N
Collect local assessment data, such as SAT-10, Think-Link, Aims-Web, SRA-Corrective Reading, DIBELS	3		N	N
Collect interventions (RTI) for individual students	3		N	N
Collect and display IQ data	3		N	N
Display data using graphics	1		NA	NA
Collect student gender	1	Data currently collected in ISBE SIS	Y	Y
Collect student race/ethnicity	1	Data currently collected in ISBE SIS	Y	Y
Collect family income (prior to students filing FAFSAs)	3		N	N
Collect other SES data (such as single parent family, parental education)	3		N	N
Collect attitudes about the value of postsecondary education	3		N	N

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
Collect attitudes toward debt acquisition	3		N	N
Collect sources used, if any, for information on applying to and paying for college	3		N	N
Collect media used in student's household (newspapers, TV, cable, radio, internet, etc)	3		N	N
Collect unique student identifier	1	Data currently collected in ISBE SIS	Y	Y
Collect middle school GPA	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	Y
Collect participation in free / reduced price lunch program	1	Data currently collected in ISBE SIS	Y	Y
Collect middle school standardized test scores	1	Data currently collected in ISBE SIS	Y	Y
Collect 8th grade level math class and grade	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	Y
Collect high school GPA	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	Y
Collect high school standardized test scores	1	Data currently collected in ISBE SIS	Y	Y
Collect high school class rank	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	Y
Collect high school number in class	1	Data currently collected in ISBE SIS	Y	Y
Collect high school students completing the fourth year of various core courses	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	Y
Collect high school students completing third year of a foreign language	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	Y
Collect high schools students taking AP or IB courses	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	Y

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
Collect 9th grade math class	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	Y
Collect rigor of HS curriculum	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	Y
Collect remedial coursework taken in postsecondary programs	3		N	Y
Collect number of hours students worked each week	3		N	N
Collect whether students live on or off-campus or with their parents	3		N	N
Collect number of credit cards and average total balance	3		N	N
Collect information on the need to work while in college	3		N	N
Collect hours enrolled in college	2	ISEG/IHEC to collect	N	Y
Collect performance and graduation rates for those attending out-of-state	2	Data to be collected by IHEC as part of SLDS Expansion Grant	N	NA
Collect enrollment data for all Illinois postsecondary schools	1	ISEG/IHEC to collect	N	NA
Collect graduation data for all Illinois postsecondary schools	1	ISEG/IHEC to collect	N	NA
Collect reasons for dropping out of college (financial, personal, etc. by exit interview?)	3		N	N
Collect post-college employment information	3		N	Y
What were high school and postsecondary graduates doing at periodic intervals after graduation?	3		N	N
% high school graduates, non-graduates	1		Y	Y
What, if any, further formal education had been pursued after leaving high school?	3		N	N
Vocational?	3		N	N
Community College?	1		N	Y
College or University?	1		N	Y
Other	3		N	N
What, if any, employment did graduates pursue?	3		N	N
Military service?	3		N	N
Incarceration rates	3		N	N
Death rates	3		N	N
Number engaged in public service or particular careers, such as teaching…	3		N	N
Number who owned their own businesses	3		N	N
Geographic distribution/how many stayed/left the community	3		N	N

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
At what point did non-graduates leave school?	1		Y	Y
How many non-graduates obtained a GED? After how many years?	1	Collected by ICCB	N	Y
What data do we have that informs our expenditure for gifted and talented programs? Is our gifted and talented program making a difference in terms of academic achievement?	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	N
What data can you show us that our expenditures for ESL programs are making a difference in academic achievement for ESL students? 8b What program delivery system seems most effective? How will it be evaluated? What data is there comparing programs?	1	Data partially collected by ISBE	Y	N
What data do we have that our expenditure for student support personnel are making a difference in attitude, behaviors, and achievement of students K-12? (How do you measure the success of open houses? Other parent involvement programs?? How are nurses, counselors, etc., being used?	1	Data partially collected by ISBE	Y	N
What data do we have that the expenditures for teacher assistants/paraprofessionals are making a difference in student achievement?	1	Data partially collected by ISBE	Y	N
What data do we have that expenditures for arts, music and PE are making a difference in academic achievement?	2	Data to be collected in SIS as part of ILDS Expansion Grant	N	N
What data do we have that our expenditures for leadership are making a difference in school culture and reading and achievement?	3		N	N
What data do we have that shows how expenditures for our 1st, 2nd, 3rd year teacher monitoring is making a difference?	3		Y	N
Presence of after school programs	3		N	N
Unified state level assessment level data	1		Y	Y
Student profile	3		N	NA
Early warning system	3		N	Y
Improve common language	1		NA	NA
Intervention effectiveness measures	3		N	N
Local formative assessments aligned to common learning standards	3		N	N
Enable comparisons between similar entities	1		Y	Y
Common learning standards	3		N	N
Timely feedback, access to data	3		Y	Y
Program membership - LEP, IEP, etc.	1		Y	Y
District and school profiles	1		Y	Y
Teacher view of students over time to see future growth	3		Y	Y
Access to detailed level assessment data, reflecting weighting	3		N	N

Context	DW Phase	Comment	ISBE Y/N	RDS Y/N
Growth trajectories at a detailed level	3		N	Y
Growth models	3		N	Y

Appendix B: Detailed Source Information

Original Scope	DW Scope	Repository Name	Type of Data	Purpose
In	Phase I	Annual Financial Report	Financial	Collects LEA-level financial information and produces information for the Fiscal Common Core of Data (CCD), EDEN, Illinois State Report Card, and other state-mandated financial reports
In	Phase I	Annual Report of the Budget	Financial	Presents and supports development of the ISBE Annual Budget
In	Phase I	Bilingual Education Program Delivery Reports	Student Teacher Program	LEP data and determining LEP screening levels
In	Phase I	Education Data Exchange Network (EDEN)	SEA LEA School	Federal Reporting
In	Phase I	Facilities and Inventory	School	Collects data on buildings and properties maintained by LEAs
In	Phase I	General State Aid	Financial	Supports calculation of general state aid amount
In	metadata only	Illinois Purchased Care Review Board System	Program	FACTS collects LEA special education funding and approval tracking information
In	Phase I	eReport Card	SEA LEA School	Presents aggregate data at school/LEA/SEA level
In	Phase I	Non-Public School Registration, Enrollment and Staff Report	Student	Aggregates annual non-public student data, student events and activities, and provider information
In	Phase I	Pre K At Risk and Preschool for All Program Record	Student Program	Collected District level Pre K funded programs
In	Phase I	Reduction in Force Survey	Teacher	Meets annual requirements for districts to provide information on the reduction of tenured and nontenured teachers to the Illinois State Board of Education
In	Phase I	Regional Safe Schools Program	Student	Data reported by Regional Offices of Education, Intermediate Service Centers, and City of Chicago School District 299 on their Regional Safe Schools Programs

Original Scope	DW Scope	Repository Name	Type of Data	Purpose
In	Phase I	Special Education Systems, Approval and Reimbursement System	Student Special Education	SEARS collects individual student data on students with individualized education programs (IEPs) and personnel data on all full and part-time special education staff, and produces required program information for the Individuals with Disabilities Education Act and state-mandated special education programs
In	Phase I	Student Information System	Student Incident	Student data
In	Phase I	Teacher Certification Information System	Staff	Collects and manages data and processes that support teacher certifications, teacher placement, professional development, and teacher demographic information Contains individual salary and demographic data for teachers and administrators employed in Illinois LEAs, and produces information for school and LEA report cards, annual statistical reports, and federal reports
In	Phase I	Teacher Service Record	Staff	TSR Contains salary and demographic data for individual educators employed in Illinois LEAs in a position that requires teaching, administrative or school service personnel certificate issued by ISBE and produces information for school and LEA report cards, annual statistical reports, and federal reports
In	Phase I	The Funding and Child Tracking System	Student	FACTS collects LEA special education funding and approval tracking information
In	Phase I	Truants Alternative & Optional Education Program	Student	Reports on the results of programs to reduce truancy
In	Phase I (Partial)	Electronic Grants Management System	Financial	Collects application and budget data from LEAs for the No Child Left Behind (NCLB) consolidated applications and a variety of state entitlement and discretionary grant programs
In	Phase III	Financial Reimbursement Information System	Financial	Collects financial information including allotments, reimbursable program budgets, reimbursement claims, and payments
In	Deprecated to SIS: CTE	Illinois Student Information System	Student	Maintains data on students taking Career and Technical Education curriculum courses. Produces program accountability for the Carl D. Perkins Vocation and Technical Education Act
In	Deprecated to SIS: CTE	Performance Management Information System	Student	Legacy collection of Career and Technical Education Student Data

Original Scope	DW Scope	Repository Name	Type of Data	Purpose
In	Deprecated to SIS: CTE	Planning (PAS – Program Approval System)	Student	Legacy collection of Career and Technical Education course data
In	metadata only	Annual Statistical Report	General	Supports the generation of annual reports
In	metadata only	Application and Claim Entry System	Program	Collects application, claim, and monitoring data for sponsors and sites in the National School Lunch Program, Child and Adult Care Homes Program, Child and Adult Care Day Care Centers Program, and the Summer Food Service Program
In	Phase 1	Child Nutrition System	Program	Collects application, claim, and monitoring data for sponsors and sites in the National School Lunch Program, Child and Adult Care Homes Program, Child and Adult Care Day Care Centers Program, and the Summer Food Service Program
In	metadata only	Educator Certification System	Staff	Web-based entry system for teachers
In	metadata only	Educator Supply and Demand Report	Teacher	
In	Phase III	Management Information Database Accounting System	Financial	Captures and maintains agency accounting data including appropriations, grants, cash management, requests, obligations, and vouchers
In	metadata only	Professional Development Provider System	Staff	Supports the collection and approval of professional development courses
In	Phase III	Special Education Data System	Program	Collects special education due process, focused monitoring, mediation requests, and proceedings data
Out	Phase I	Assessment Score File	Student	Assessment data from vendors
Out	Phase I	End of Year Report	LEA	Collection of data to support generation of annual end of year reports
Out	Phase I	Entity Profile System	Directory	Manage core org data
Out	Phase I	Shuwan School Report Card File	LEA School	Used for IIRC and State Report Card
Out	Phase I and II	SIS: Course Classification	Student Incident	Statewide Course Classification System
Out	Phase II	SIS: Section Enrollment	Student Incident	Statewide collection of courses that students are enrolled in

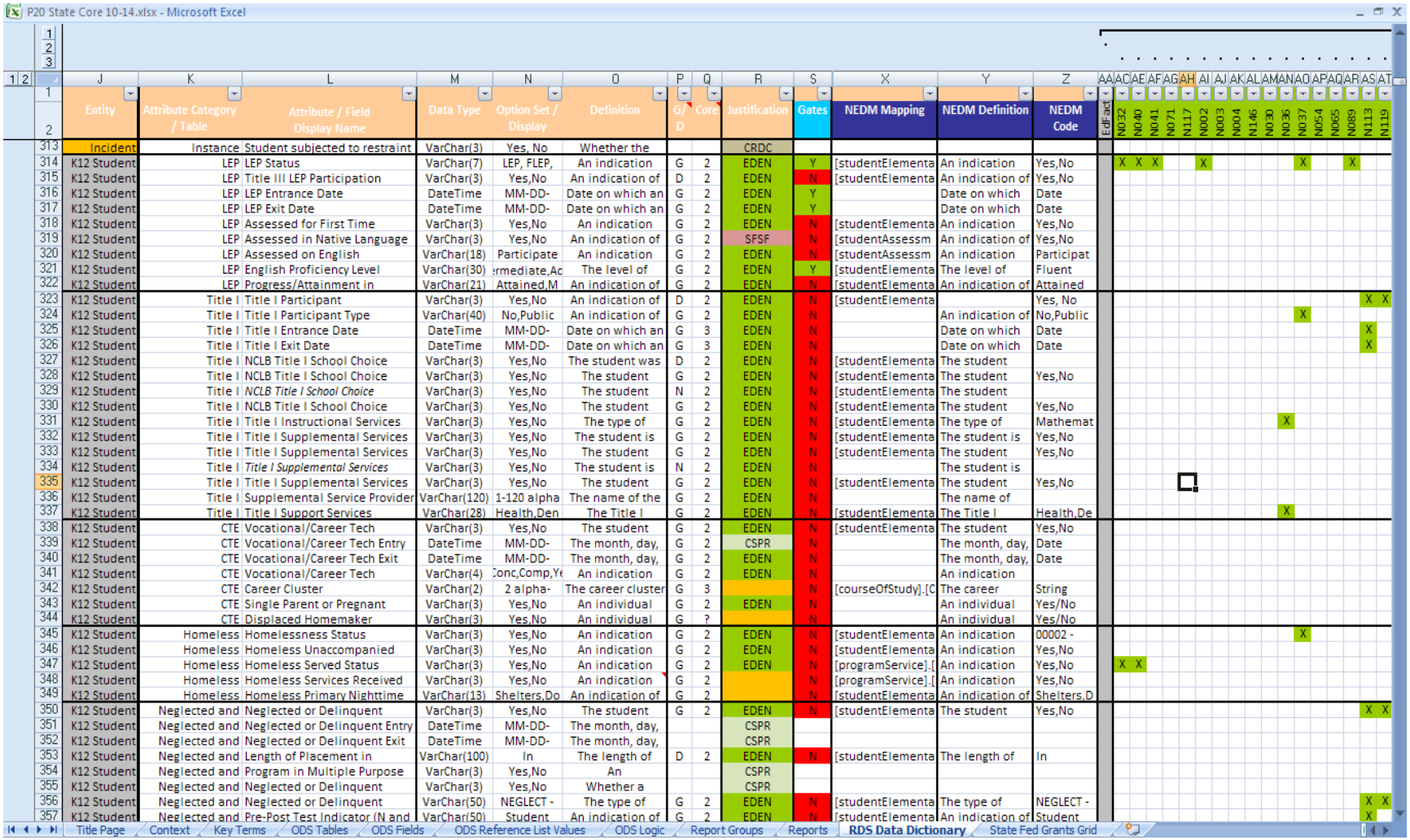
Original Scope	DW Scope	Repository Name	Type of Data	Purpose
Out	metadata only	Assessment Correction File	Student	Assessment corrections
Out	metadata only	Assessment Results File	Student Incident	Assessment results
Out	metadata only	Budgeting Database	Financial	Used to support generation of annual budget
Out	metadata only	CDS and CDS-like tables	Directory	Manage RCDTS codes
Out	metadata only	CTE Report Card	Program	Career and Technical Education Annual Report Card data
Out	metadata only	Early Childhood Parent Evaluation/Demographic	Student Parent	Demographic data for PI program, Evaluation Prevention Initiative Program, and Parental Training Program
Out	metadata only	EFE List of Personnel	Teacher	Education for Employment personnel and organizational structure information
Out	metadata only	Employment Data	Teacher	Shared placement data for PS, military, employment
Out	metadata only	High School Students Taking Community College Classes - IWAS collection	Student	Dual credit course collection
Out	metadata only	IHEC Proposed Element List	Post-secondary	Illinois Higher Education Consortium proposed collection of postsecondary data
Out	metadata only	Illinois Administrative Academy Management System	Staff	Tracking system for courses for administrators
Out	metadata only	Illinois Shared Enrollment & Graduation	Post-secondary	Collection of post-secondary data
Out	metadata only	IWAS - IL	Directory	Authentication portal
Out	metadata only	Noncertified Staff Salary Study	Teacher	Collection of salary data for noncertified staff
Out	metadata only	Office of Vocational and Adult Education	Program	Career and Technical Education data for Perkins calculations
Out	metadata only	Parental Training Program Record	LEA	Serves at risk children 0-3; and/or 3-5
Out	metadata only	Prevention Initiative Program Record (EC)	LEA	Mandated: Collection and Report Serves at risk children 0-3

Original Scope	DW Scope	Repository Name	Type of Data	Purpose
Out	metadata only	School Incident Reporting System - collection on behalf of state police --	Student	Discipline, IL state police, Amber alert
Out	metadata only	SIS - End of Year File - not a snapshot	Student Incident	Student data as of 6/30
Out	metadata only	SIS - Fall Enrollment Snapshot	Student Incident	Student data as of 9/30
Out	metadata only	Special Education Monitoring and Reporting System (SEMRS)	Student	Special education data warehouse
Out	metadata only	Student Health - Dental	Student	Annual collection of aggregate counts of student dental exams to meet health data reporting requirements
Out	metadata only	Student Health - Immunization	Student	Annual collection of aggregate counts of student dental exams to meet health data reporting requirements
Out	metadata only	Student Health - Vision	Student	Data on the immunization status of school-age children in Illinois
Out	metadata only	System for developing allocations of federal funds - Perkins allocation	Financial	Perkins allocation calculation
Out	metadata only	Teacher Salary Study	Teacher LEA	Collect contract staff data
Out	metadata only	Title I Status Survey	school	Determine which schools are Title 1 Schools
Out	metadata only	Unfilled Positions Survey	Teacher	Information about the number of unfilled educator positions in school districts
Out	metadata only	Vocational performance management system	Program	Career and Technical Education

Appendix C: EDEN/EDFacts Data Mart

PCG's work in the development of the P20 State Core Model and with NEDM has resulted in a detailed mapping of all 79 EDEN/EDFacts files to the P20 State Core RDS. Mapping the ILDS data elements to the RDS will result in an EDEN/EDFacts data mart, providing collection periods and specific data elements for each EDEN file. This process will identify gaps between the ILDS elements and the EDEN files, and will enable ISBE to justify adding these missing elements to the data warehouse. Figure B below is a snapshot of EDEN/EDFacts files mapped to the P20 State Core RDS. Column R provides the justification for including an element in the model; any element required for EDFacts is noted with a "1." Beyond EDEN, this map contains 625 required federal data collections. Completing the ILDS map to the P20 State Core RDS will provide a data mart and gap analysis for all required federal collections.

Attachment C. Snapshot of EDEN maps to RDS



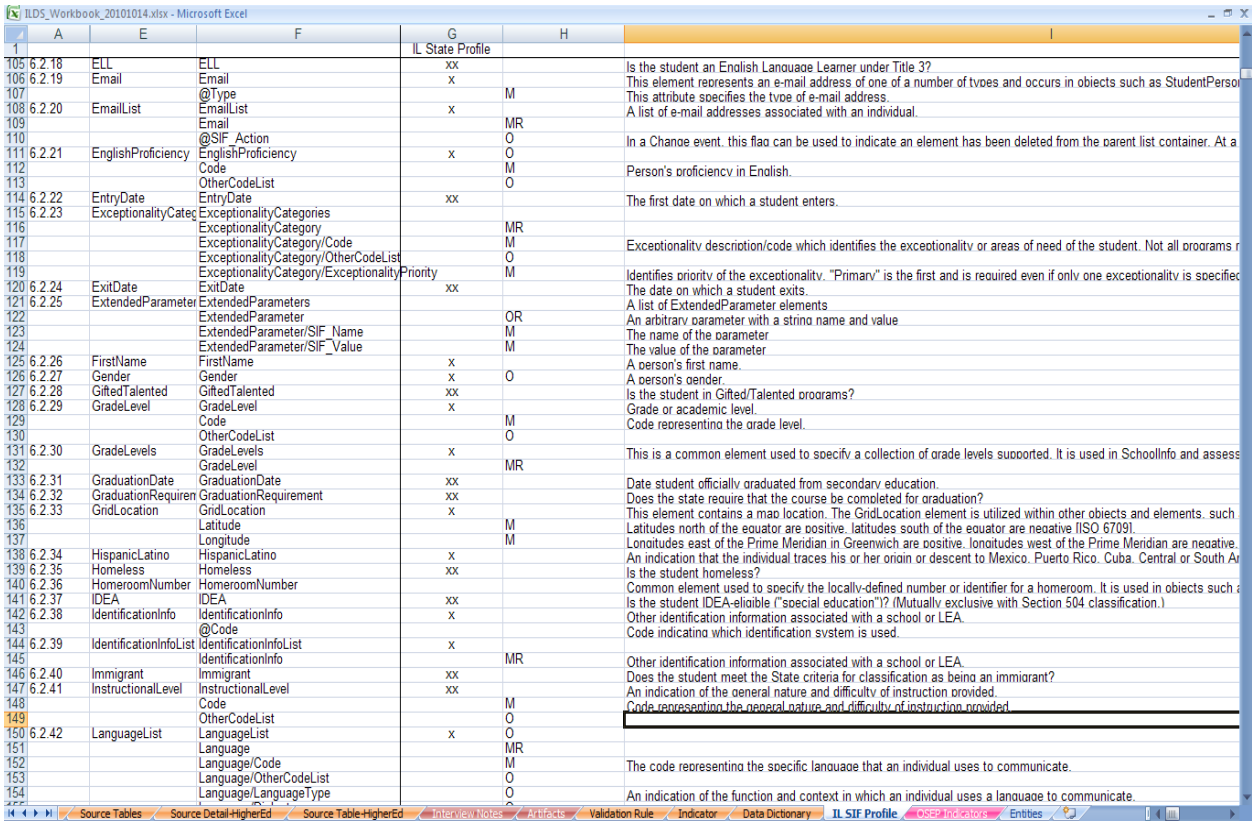
P20 State Core 10-14.xlsx - Microsoft Excel

	J	K	L	M	N	O	P	Q	R	S	X	Y	Z	AA	AC	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
2	Entity	Attribute Category / Table	Attribute / Field Display Name	Data Type	Option Set / Display	Definition	G/ D	Core	Justification	Gates	NEDM Mapping	NEDM Definition	NEDM Code	EdFact	N032	N040	N041	N071	N117	N002	N003	N004	N146	N030	N036	N037	N054	N065	N089	N113	N119
313	Incident	Instance	Student subjected to restraint	VarChar(3)	Yes, No	Whether the			CRDC																						
314	K12 Student	LEP	LEP Status	VarChar(7)	LEP, FLEP,	An indication	G	2	EDEN	Y	[studentElementa	An indication	Yes,No		X	X	X			X						X			X		
315	K12 Student	LEP	Title III LEP Participation	VarChar(3)	Yes,No	An indication of	D	2	EDEN	N	[studentElementa	An indication of	Yes,No																		
316	K12 Student	LEP	LEP Entrance Date	DateTime	MM-DD-	Date on which an	G	2	EDEN	Y		Date on which	Date																		
317	K12 Student	LEP	LEP Exit Date	DateTime	MM-DD-	Date on which an	G	2	EDEN	Y		Date on which	Date																		
318	K12 Student	LEP	Assessed for First Time	VarChar(3)	Yes,No	An indication	G	2	EDEN	N	[studentElementa	An indication	Yes,No																		
319	K12 Student	LEP	Assessed in Native Language	VarChar(3)	Yes,No	An indication of	G	2	SFSF	N	[studentAssessm	An indication of	Yes,No																		
320	K12 Student	LEP	Assessed on English	VarChar(18)	Participate	An indication	G	2	EDEN	N	[studentAssessm	An indication	Participat																		
321	K12 Student	LEP	English Proficiency Level	VarChar(30)	rmediate,Ac	The level of	G	2	EDEN	Y	[studentElementa	The level of	Fluent																		
322	K12 Student	LEP	Progress/Attainment in	VarChar(21)	Attained,M	An indication of	G	2	EDEN	N	[studentElementa	An indication of	Attained																		
323	K12 Student	Title I	Title I Participant	VarChar(3)	Yes,No	An indication of	D	2	EDEN	N	[studentElementa		Yes, No																	X	X
324	K12 Student	Title I	Title I Participant Type	VarChar(40)	No,Public	An indication of	G	2	EDEN	N		An indication of	No,Public													X					
325	K12 Student	Title I	Title I Entrance Date	DateTime	MM-DD-	Date on which an	G	3	EDEN	N		Date on which	Date																	X	
326	K12 Student	Title I	Title I Exit Date	DateTime	MM-DD-	Date on which an	G	3	EDEN	N		Date on which	Date																	X	
327	K12 Student	Title I	NCLB Title I School Choice	VarChar(3)	Yes,No	The student was	D	2	EDEN	N	[studentElementa	The student																			
328	K12 Student	Title I	NCLB Title I School Choice	VarChar(3)	Yes,No	The student	G	2	EDEN	N	[studentElementa	The student	Yes,No																		
329	K12 Student	Title I	*NCLB Title I School Choice*	VarChar(3)	Yes,No	The student	N	2	EDEN	N	[studentElementa	The student																			
330	K12 Student	Title I	NCLB Title I School Choice	VarChar(3)	Yes,No	The student	G	2	EDEN	N	[studentElementa	The student	Yes,No																		
331	K12 Student	Title I	Title I Instructional Services	VarChar(3)	Yes,No	The type of	G	2	EDEN	N	[studentElementa	The type of	Mathemat												X						
332	K12 Student	Title I	Title I Supplemental Services	VarChar(3)	Yes,No	The student is	G	2	EDEN	N	[studentElementa	The student is	Yes,No																		
333	K12 Student	Title I	Title I Supplemental Services	VarChar(3)	Yes,No	The student	G	2	EDEN	N	[studentElementa	The student	Yes,No																		
334	K12 Student	Title I	*Title I Supplemental Services*	VarChar(3)	Yes,No	The student is	N	2	EDEN	N		The student is																			
335	K12 Student	Title I	Title I Supplemental Services	VarChar(3)	Yes,No	The student	G	2	EDEN	N	[studentElementa	The student	Yes,No																		
336	K12 Student	Title I	Supplemental Service Provider	VarChar(120)	1-120 alpha	The name of the	G	2	EDEN	N		The name of																			
337	K12 Student	Title I	Title I Support Services	VarChar(28)	Health,Den	The Title I	G	2	EDEN	N	[studentElementa	The Title I	Health,De												X						
338	K12 Student	CTE	Vocational/Career Tech	VarChar(3)	Yes,No	The student	G	2	EDEN	N	[studentElementa	The student	Yes,No																		
339	K12 Student	CTE	Vocational/Career Tech Entry	DateTime	MM-DD-	The month, day,	G	2	CSPR	N		The month, day,	Date																		
340	K12 Student	CTE	Vocational/Career Tech Exit	DateTime	MM-DD-	The month, day,	G	2	EDEN	N		The month, day,	Date																		
341	K12 Student	CTE	Vocational/Career Tech	VarChar(4)	Conc,Comp,Ye	An indication	G	2	EDEN	N		An indication																			
342	K12 Student	CTE	Career Cluster	VarChar(2)	2 alpha-	The career cluster	G	3		N	[courseOfStudy].[C	The career	String																		
343	K12 Student	CTE	Single Parent or Pregnant	VarChar(3)	Yes,No	An individual	G	2	EDEN	N		An individual	Yes/No																		
344	K12 Student	CTE	Displaced Homemaker	VarChar(3)	Yes,No	An individual	G	?		N		An individual	Yes/No																		
345	K12 Student	Homeless	Homelessness Status	VarChar(3)	Yes,No	An indication	G	2	EDEN	N	[studentElementa	An indication	00002 -													X					
346	K12 Student	Homeless	Homeless Unaccompanied	VarChar(3)	Yes,No	An indication	G	2	EDEN	N	[studentElementa	An indication	Yes,No																		
347	K12 Student	Homeless	Homeless Served Status	VarChar(3)	Yes,No	An indication	G	2	EDEN	N	[programService].[	An indication	Yes,No		X	X															
348	K12 Student	Homeless	Homeless Services Received	VarChar(3)	Yes,No	An indication	G	2		N	[programService].[	An indication	Yes,No																		
349	K12 Student	Homeless	Homeless Primary Nighttime	VarChar(13)	Shelters,Do	An indication of	G	2		N	[studentElementa	An indication of	Shelters,D																		
350	K12 Student	Neglected and	Neglected or Delinquent	VarChar(3)	Yes,No	The student	G	2	EDEN	N	[studentElementa	The student	Yes,No																	X	X
351	K12 Student	Neglected and	Neglected or Delinquent Entry	DateTime	MM-DD-	The month, day,			CSPR																						
352	K12 Student	Neglected and	Neglected or Delinquent Exit	DateTime	MM-DD-	The month, day,			CSPR																						
353	K12 Student	Neglected and	Length of Placement in	VarChar(100)	In	The length of	D	2	EDEN	N	[studentElementa	The length of	In																		
354	K12 Student	Neglected and	Program in Multiple Purpose	VarChar(3)	Yes,No	An			CSPR																						
355	K12 Student	Neglected and	Neglected or Delinquent	VarChar(3)	Yes,No	Whether a			CSPR																						
356	K12 Student	Neglected and	Neglected or Delinquent	VarChar(50)	NEGLECT -	The type of	G	2	EDEN	N	[studentElementa	The type of	NEGLECT -																	X	X
357	K12 Student	Neglected and	Pre-Post Test Indicator (N and	VarChar(50)	Student	An indication of	G	2	EDEN	N	[studentElementa	An indication of	Student																	X	

Title Page | Context | Key Terms | ODS Tables | ODS Fields | ODS Reference List Values | ODS Logic | Report Groups | Reports | **RDS Data Dictionary** | State Fed Grants Grid

Appendix D: SIF Transaction Sets

Through discussion with the ILDS project manager, PCG identified the SIF transaction sets that will be included in the data warehouse and mapped to the data dictionary. The National Education Data Model transcript report identifies specific SIF transaction sets needed for transcript data. PCG intends to use this as guidance for mapping SIF compliant transactions to support SIF vertical reporting and submission of electronic transcripts.



ILDS_Workbook_20101014.xlsx - Microsoft Excel

	A	E	F	G	H	I
1				IL State Profile		
105	6.2.18	ELL	ELL	xx		Is the student an English Language Learner under Title 3?
106	6.2.19	Email	Email	x		This element represents an e-mail address of one of a number of types and occurs in objects such as StudentPerso
107			@Type		M	This attribute specifies the type of e-mail address.
108	6.2.20	EmailList	EmailList	x		A list of e-mail addresses associated with an individual.
109			Email		MR	
110			@SIF_Action		O	In a Change event, this flag can be used to indicate an element has been deleted from the parent list container. At a
111	6.2.21	EnglishProficiency	EnglishProficiency	x	O	
112			Code		M	Person's proficiency in English.
113			OtherCodeList		O	
114	6.2.22	EntryDate	EntryDate	xx		The first date on which a student enters.
115	6.2.23	ExceptionalityCateg	ExceptionalityCategories			
116			ExceptionalityCategory		MR	
117			ExceptionalityCategory/Code		M	Exceptionality description/code which identifies the exceptionality or areas of need of the student. Not all programs r
118			ExceptionalityCategory/OtherCodeList		O	
119			ExceptionalityCategory/ExceptionalityPriority		M	Identifies priority of the exceptionality. "Primary" is the first and is required even if only one exceptionality is specifie
120	6.2.24	ExitDate	ExitDate	xx		The date on which a student exits.
121	6.2.25	ExtendedParameter	ExtendedParameters			A list of ExtendedParameter elements
122			ExtendedParameter		OR	An arbitrary parameter with a string name and value
123			ExtendedParameter/SIF_Name		M	The name of the parameter
124			ExtendedParameter/SIF_Value		M	The value of the parameter
125	6.2.26	FirstName	FirstName	x		A person's first name.
126	6.2.27	Gender	Gender	x	O	A person's gender.
127	6.2.28	GiftedTalented	GiftedTalented	xx		Is the student in Gifted/Talented programs?
128	6.2.29	GradeLevel	GradeLevel	x		Grade or academic level.
129			Code		M	Code representing the grade level.
130			OtherCodeList		O	
131	6.2.30	GradeLevels	GradeLevels	x		This is a common element used to specify a collection of grade levels supported. It is used in SchoolInfo and assess
132			GradeLevel		MR	
133	6.2.31	GraduationDate	GraduationDate	xx		Date student officially graduated from secondary education.
134	6.2.32	GraduationRequiren	GraduationRequirement	xx		Does the state require that the course be completed for graduation?
135	6.2.33	GridLocation	GridLocation	x		This element contains a map location. The GridLocation element is utilized within other objects and elements, such
136			Latitude		M	Latitudes north of the equator are positive, latitudes south of the equator are negative [ISO 6709].
137			Longitude		M	Longitudes east of the Prime Meridian in Greenwich are positive, longitudes west of the Prime Meridian are negative.
138	6.2.34	HispanicLatino	HispanicLatino	x		An indication that the individual traces his or her origin or descent to Mexico, Puerto Rico, Cuba, Central or South Ar
139	6.2.35	Homeless	Homeless	xx		Is the student homeless?
140	6.2.36	HomeroomNumber	HomeroomNumber			Common element used to specify the locally-defined number or identifier for a homeroom. It is used in objects such a
141	6.2.37	IDEA	IDEA	xx		Is the student IDEA-eligible ("special education")? (Mutually exclusive with Section 504 classification.)
142	6.2.38	IdentificationInfo	IdentificationInfo	x		Other identification information associated with a school or LEA.
143			@Code			Code indicating which identification system is used.
144	6.2.39	IdentificationInfoList	IdentificationInfoList	x		
145			IdentificationInfo		MR	Other identification information associated with a school or LEA.
146	6.2.40	Immigrant	Immigrant	xx		Does the student meet the State criteria for classification as being an immigrant?
147	6.2.41	InstructionalLevel	InstructionalLevel	xx		An indication of the general nature and difficulty of instruction provided.
148			Code		M	Code representing the general nature and difficulty of instruction provided.
149			OtherCodeList		O	
150	6.2.42	LanguageList	LanguageList	x	O	
151			Language		MR	
152			Language/Code		M	The code representing the specific language that an individual uses to communicate.
153			Language/OtherCodeList		O	
154			Language/LanguageType		O	An indication of the function and context in which an individual uses a language to communicate.

Source Tables | Source Detail-HigherEd | Source Table-HigherEd | Interview Notes | Artifacts | Validation Rule | Indicator | Data Dictionary | IL SIF Profile | Open Indicators | Entities

Deliverable 4:
Data Architecture System Design

DOCUMENT PROFILE

Purpose and Objectives

- To provide the system design for the Illinois Longitudinal Data System (ILDS) Phase I and II engineering and deployment
- Explain the ERD

Scope

- Purpose of CCSSO State Core Model
- Standard and Education Context of Model design
- Data Security & Privacy

Intended Audience

- Illinois State Board of Education (ISBE) Executive Team
- Data advisory committee and other stakeholders
- Internal ISBE data management staff
- Data warehouse engineers

Assumptions and Constraints

- ILDS Phase I and II scope is dictated by Statewide Longitudinal Data System (SLDS) 2009 Grant as modified by the SLDS expansion grant and will **include teacher-student link with period attendance and grades.**
- All sources and reports included in the Data Warehouse Architecture Request for Sealed Proposal (RFSP) were presumed to be included, unless explicitly added or excluded through this project.
- ILDS Phase III vision will be guided by a more expansive scope as described by the Learning and Performance Management components of the Illinois Race to the Top (RTTT) proposal.

Document Overview

The document consists of five main sections:

I. Abstract
II. Purpose of Model
III. Education Context
IV. Standards Context
V. Data Security and Privacy
VI. The Model

1.0 ABSTRACT

The State Core Model is a common technical reference model for states implementing state longitudinal data systems (SLDS). It was developed by CCSSO as part of the Common Education Data Standards (CEDS) adoption work with funding from the Gates Foundation[7].

The Model includes early childhood (EC), elementary and secondary (K12), post-secondary (PS), and workforce (WF) elements, known collectively as "P20," and establishes comparability between sectors and between states.

The core purpose of an SLDS is to fulfill federal reporting (e.g. ACS-801, EDFacts, IPEDS), support SEA, LEA, and research data-driven decision making, and enable exchange of comparable data between education agencies. The Model could enable states to vastly reduce the burden of data reporting by replacing 625 distinct Federal reporting types with record-level data collections. In addition, it is designed to support dropout early warning intervention systems (DEWIS), positive behavior intervention systems (PBIS) and response to intervention (RTI), balanced scorecard performance management, and provide an extensible model capable of accommodating future needs.

The Model is designed to address unique, complex P20 SLDS relationships, business rules, and entity factoring including: properly distinguishing "official" and "un-official" (but possibly more current) data; source files with different and or non-existent start and end dates; complex relationships between organizations; and people with multiple roles in multiple organizations including student-teacher linkage. It addresses the common assessment data model, security and privacy issues, and comes pre-loaded with Common Core learning standards.

The State Core Model consists of three principle artifacts: (1) this document; (2) the "State Core Workbook," an Excel 2007 file containing the data dictionary and maps; and (3) logical data model scripts to support implementation of the model in major technical platforms. All three artifacts can be downloaded and used without charge or attribution from the EIMAC group site. These artifacts provide an operational model that can be used to store data from multiple agencies. Along with these artifacts it is anticipated that participating states will continue to develop additional artifacts to realize the full potential of the State Core Model, including the physical structure and the business rules for transforming data for federal reporting and other purposes.

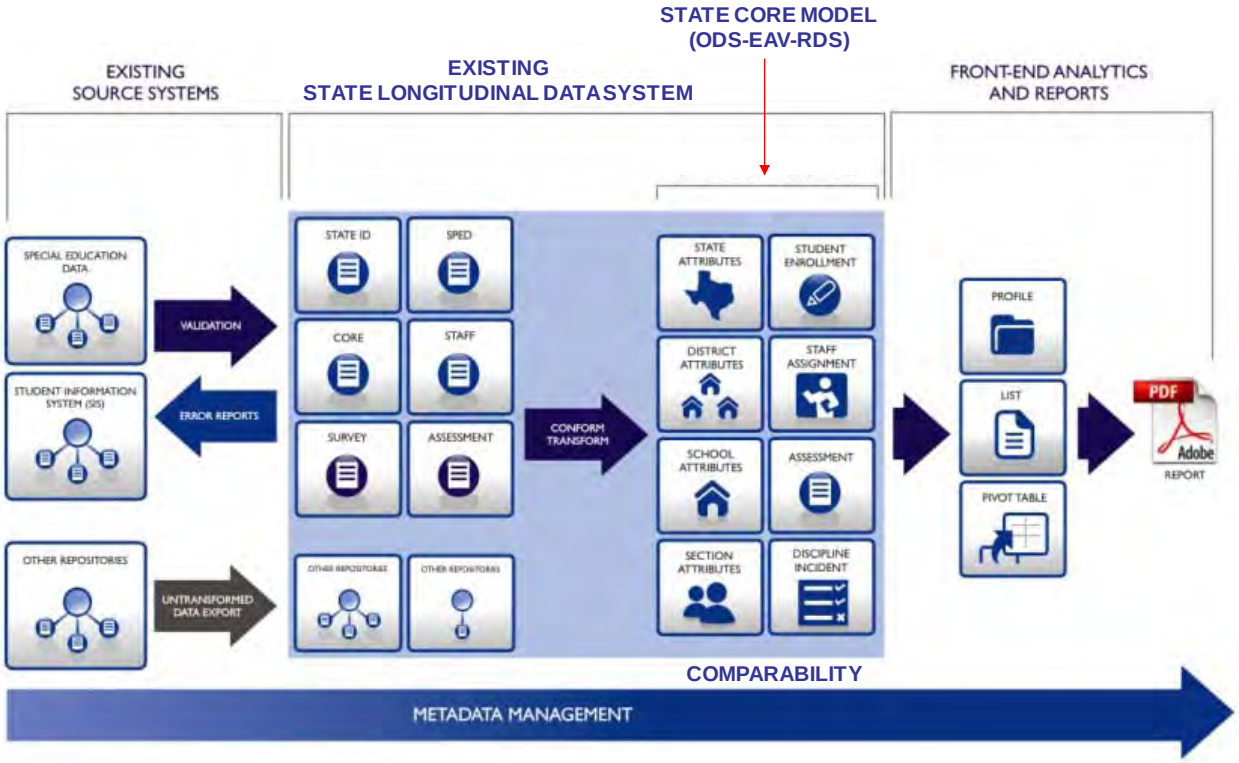
[7] . The State Core Model will be used by the CEDS Adoption Implementation Task Force (AITF) to validate, improve, and expand future versions of the standards. It incorporates and acknowledges work previously published, specifically the National Center for Education Statistics (NCES) data handbook, National Education Data Model (NEDM) v2.0, Early Childhood Data Collaborative (ECDC) recommendations, School Interoperability Framework (SIF) v2.4 specification, Post-Secondary Electronic Standards Council (PESC) schemas, State Higher Education Executive Officers (SHEEO) State of State PS Data Systems report , and Common Education Data Standards v1.0.

2.0 PURPOSE OF THE MODEL

The purpose of the State Core Model is to serve as a set of best practices and standard views to support efficiency, maturity, comparability, and interoperability of SLDSs. The State Core Model will enable states to align across multiple agencies and streamline data management and reporting. The Model will enable comparability of data between states from early childhood, through K-12, post-secondary, and workforce. This will allow for improved research and analytic capabilities and targeted intervention.

State Education Data Flow

The Model is a logical reference model with conceptual model context and a physical model for testing and evaluation. The State Core Model is intended to help shape and compliment existing SLDSs, not replace them. As such, it sits in line "downstream" from the existing SLDS:



State Longitudinal Data Systems do not originate most data. Traditionally, early childhood, post-secondary and workforce data originate in other systems and flow into the SLDS as interagency data sharing agreements are put in place. Most state K-12 core education data has originated in school and district-based systems such as SIS, SpEd, etc. and from assessment vendors. These systems store transactional data. Files are created for vertical reporting to the state. The SLDS validates, transforms, stores, and reports on data typically originating in district source systems. Submissions from local sources systems are collected by the state and merged with state sources to create a SLDS data warehouse (DW). As part of the transformation process, codes are mapped to display values and derived elements are created. For the purposes of this model, all of the repositories involved in the

collection, validation, and transformation process will be called **staging data stores (SDS)**. Each state's SLDS SDS will be unique to the collected elements, periodicity, and rules of the state.

The Importance of Metadata

Metadata (e.g. data about data), is in fact the most important component of longitudinal data management. Few would build any but the most simple of houses without architect designed plans. Yet, many states have allowed there data management systems to evolve with little or no planning and design up front. The results are as predictable as they are avoidable.

Data Storage Schemas

The State Core Model described in detail in Section 6 describes three interconnected technical schemas of data that could be created from each state's SLDSs:

1. **The operational data store (ODS)** layer represents the SLDS's most current data. The ODS is optimized for storage of a record for each relationship between a person and organization. Attributes can be updated in an existing enrollment record or a new enrollment can be added.

2. **The entity-attribute-value (EAV)** layer provides ultimately atomic change control. A small set of tables is used to hold a record with a date for every change in value for an attribute of an entity. The EAV is the auditing data store with a complete log of all data modifications.

3. **The reporting data store (RDS)** layer is optimized for reporting. The primary structure is a snapshot of active students enrolled as members and teachers assigned to schools on a specific day. Additional data marts are created to support specific reporting requirements, such as EDEN, balanced scorecards and other school and district aggregate reports.

Federal Reporting

The State Core Model includes detailed maps to 625 Federal reports including:

Acronym	Term	Sub-Types
EDEN	EDFacts	79 file types
CRDC	Civil Rights Data Collection	2 parts
SFSF	State Fiscal Stabilization Fund	33 indicators, 3 descriptors
MSRI	Migrant Student Records Exchange Initiative	
CSPR	Consolidated State Performance Reports	191 Indicators
OSEP	Office of Special Education Programs	34 indicators

IPEDS	Integrated Postsecondary Education Data System	
CCD	Common Core Data (fiscal)	Financial data are collected in survey format
SDFSCA	Safe and Drug Free Schools and Communities Act	Data are collected in CSPR
M-V	McKinney-Vento	Collected through CSPR.
Perkins	Perkins Act	
RTTT	Race to the Top	N/A
TIF	Teacher Incentive Fund	6 Sections
N or D	Annual Report of Neglected and Delinquent (N or D) Children	Collected through CSPR

The above table was taken from the Report Groups tab in the State Core Workbook. The State Core Model workbook also includes an analysis of the major events in the special education process.

Research and Data-Driven Decisions

As documented in Section 6.0 below, the Model identifies six primary classes of subjects:

1. **Data Sets**
2. **Organizations**
3. **People**
4. **People-Organization Relationships**
5. **Standards & Assessments**
6. **Special Events**

Of the six, only **organizations** and **people** have real world presence and can be acted upon. For each, there exists a cycle of continuous improvement within the current structure of the public education system[8]:

> These cycles go by various names. For schools, districts, and teacher training and preparation institutions, it is sometimes called:
>
> - Performance Management
> - Benchmarking
> - Balanced Scorecard
> - School Improvement
> - HS Feedback Report
> - Teacher Preparation Value Added.

[8] The phrase, "Get the right data, the right way, right away" was coined by ESP Solutions Group.

For students, current policies focus resources particularly towards students at-risk. These systems are sometimes called

- DEWIS – Drop Out Early Warning System
- PBIS – Positive Behavior Intervention System
- RTI – Response to Intervention.

In all of the above, there is a common process of (1) **Identification** – screening with data, referrals, (2) **Planning** – assigning students to interventions/programs; (3) **Progress Monitoring** – rapid cycle changes in action based on data; and (4) **Program Analysis** – correlating student participation in programs with student growth and other valid outcomes. While these processes originate in K-12, with some alterations, they are also applicable to early childhood and post-secondary.

For teachers, the cycle of performance management can only start when student growth data is linked correctly to one or more teachers of record. The data warehouse should continue to align with the national work being done to establish standard, valid, feasible methods for linking teachers to student data.

Leading national thinkers such as Clayton Christensen predict that, "by 2019, about 50 percent of high school courses will be delivered online. In other words…, the world is likely to begin flipping rapidly to student centric online technology."[9]

In this new world, students will use not one, but multiple devices each day to access their own, pervasive "virtual laptop" to support a hybrid mix of online and face-to-face learner-centric experiences. Educators, parents, and other students will work in partnership with each student to achieve internationally benchmarked learning objectives at individualized pace.

Like a car navigation system, the learning management systems of the future will know the current location of each learner and be able to plot multiple, individualized paths to the Common Core and other academic goals. Students will be able to select preferences of modality of instruction, language, and time. And, like a car navigation system, even if they decide to take a detour, the system will always know where they are, where they want to go, and multiple paths to get there.

[9] Christensen, Clayton, *Disrupting Class*, p.98.

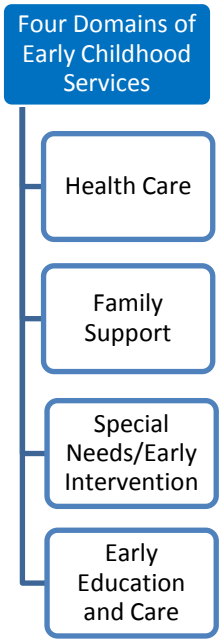
3.0 EDUCATION CONTEXT

Early Childhood Education

Background

Early childhood is loosely defined as the period of life from birth to the time of school entry. Services that support early childhood growth and development are divided into four domains[10]: health, mental health and nutrition services; family support services such as child care assistance, foster care, and parent education; special needs services such as early intervention and early childhood special education; and early childhood education (also called early care and education).

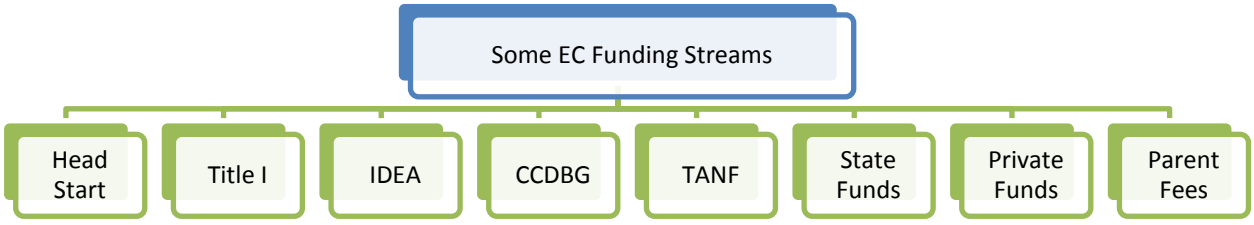
Early Childhood Education (ECE) refers to the programs and services dedicated to the education and development of children from birth to the time of school entry. Although distinct in its emphasis on education, ECE is closely tied to all domains of early childhood care.



ECE Programs and Funding Streams

There is no uniform organizing body for state early childhood education systems, no structures akin to K12 districts, no universal funding streams, and no uniform accountability or reporting requirements. As a result, there exists a myriad of diverse programs and funding sources, including privately-funded programs, state-funded preschool and Even Start programs, and federal programs and funding steams like Head Start, Title I, the Individuals with Disabilities Education Act (IDEA), Temporary Assistance for Needy Families (TANF), and the Child Care Development Block Grant (CCDBG). Grantees who receive funds through the CCDBG (also called Child Care Development Funds, or CCDF) report information on the children and families served by the funds to the Administration for Children and Families (ACF).

[10] As classified by the inter-organizational Early Childhood Systems Working Group



ECE Program Types

ECE programs are divided among child care programs that typically serve children from birth (and sometimes prenatally) to age 3; and Preschool programs (also called Prekindergarten or Pre-K) for children ages 3-4. Whether or not they have participated in a preschool program, children enroll in kindergarten typically at the age of 5. In most states, kindergarten is considered the first year of K12 services provided by LEAs, and is therefore not considered under the umbrella of ECE.

Regardless of the age of children served, ECE programs come in a variety of options. Programs can be set inside the home, in a family home, in a program center, in a combination of family and program centers, in a local school, or some other locally designed option.

Preschool. Preschool programs can be either state- or privately-funded, and typically cater to children ages 3 and/or 4. Children are enrolled in a preschool program to receive services. Services are generally serviced by a particular agency program or school. Programs vary widely in the number of hours per day, number of days per year, curriculum, and source of funding. State-funded preschool programs are profiled in an annual report by the National Institute for Early Education Research (NIEER) called the State Preschool Yearbook.

Head Start and Early Head Start. Head Start is the largest federally-funded program for preschool-age children, and serves more children than any other federally-funded ECE program. Head Start aims to prepare the children of low-income families for K12 Schools. Children are considered eligible for Head Start if their household meets specific low income requirements. Head Start programs are divided into 10 regions, an American Indian and Alaska Native Branch, and a Migrant and Seasonal Branch. Head Start also includes an Early Head Start program that

serves expectant mothers, infants, and toddlers. The majority of Head Start programs are federally-funded by the Administration for Children and Families (ACF), although a minority of programs is funded at the state or local level. Head Start programs vary widely in structure and may be center-based (either Part or Full Day), Home-based, Combination, Family Child Care, or other Locally-designed options. Head Start grantees and delegates submit program-level data to the Office of Head Start Program Information Report (PIR). The PIR contains aggregate data on the children, families, services, and staff of Head Start and Early Head Start programs nationwide. Head Start data is not currently collected in most SEA longitudinal data systems. Every three years, the Administration for Children and Families Offices of Planning, Research, and Evaluation conducts the Head Start Family and Child Experiences Survey (FACES), a longitudinal study of a nationally representative sample Head Start programs.

Home Visits. Many states communities are reaching out to pregnant women and parents of infants and toddlers through the use of a home visitation program, in which home visitors periodically visit an enrolled household to provide support services and education. Some of the larger national home visitation models include Parents as Teachers, Healthy Families America, Early Head Start, Parent Child Home Program, Home Instruction for Parents of Preschool Youngsters Status (HIPPY), and the Nurse Family Partnership.

Even Start. Even Start is an ECE program intended for children under 7-9 years old (depending on the state), and is designed to improve both child and adult literacy. Unlike Head Start, Even Start programs are administered at the state level, and are financed both locally and with some federal funds awarded by the states to local programs. Also unlike Head Start, a child is considered eligible for Even Start based primarily on the educational attainment of their parent(s) – although special consideration is given to children of low income families. As a program, Even Start is currently being phased out.

Each state decides what program types to include in its state data systems.

Early Intervention and Early Childhood Special Education

Children with disabilities are eligible to participate in EC programs funded through IDEA. Children between the ages of birth and 3 years old can be eligible for participate in Early Intervention Programs (also known as Part C of IDEA), which provides early intervention services and creates an Individual Family Service Plan (IFSP) to best provide for the child's unique developmental and educational needs. In order to participate, children must either be automatically eligible because of an established condition, or deemed eligible through evaluation and assessment. Upon exiting Part C, the child's case manager will notify parents of Part B, communicate (with consent) to the child's LEA, and oversee their smooth transition. Early Childhood Special Education programs (also known as Part B of IDEA) service children with disabilities from age 3-21, with Section 619 of Part B applicable to children from age 3-5. Part B provides special education and related services via an IFSP, or by creating and utilizing an Individual Education Program (IEP). The Office of Special Education Programs (OSEP) requires all State Part C and Part B programs to report on specific Child and Family Outcomes indicators of progress and program efficacy.

ECE Program Licensing and Accreditation

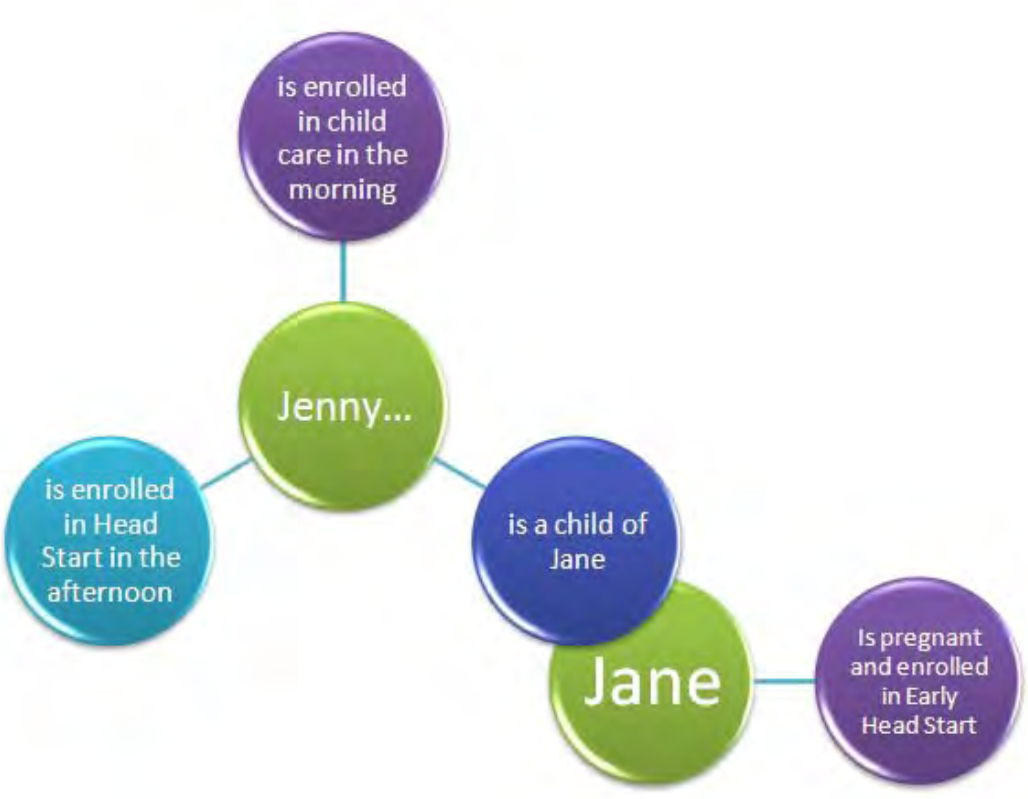
Each state determines criteria that ECE programs must meet in order to become licensed to operate within the state. Many states allow licensing exemptions for part-day programs or programs run by religious institutions. In addition to obtaining a license to operate, ECE programs can be accredited through either state or national accreditation organizations. Generally, the requirements for accreditation are stricter than the requirements for licensing, but requirements vary greatly among accreditation organizations. A growing number of states are pursuing a quality rating and improvement system (QRIS). Akin to the "stars" and "diamonds" methods of rating restaurants and hotels, QRIS is a system for surveying, communicating, and ultimately improving the level of quality of ECE programs.

ECE Workforce Qualifications

Unlike K12 teacher and administrator qualifications, which require at least a Bachelors degree and often a specific credential, Early Childhood teacher and administrator qualification standards vary widely. States, programs, and funding streams can set their own pre-service requirements. Compared to K12 requirements, emphasis in ECE is more often placed on in-service training and continued education than on pre-service requirements.

ECE Program Enrollment

Children can be enrolled in one or more ECE programs throughout the week or even during the course of the day. Parents of children enrolled in more than one program may or may not be aware of it. In some cases, simultaneous enrollment is intentional. In other cases, a child may receive services in only one location during the day, but the funding stream at that location – and therefore the "program" – may change throughout the day.



ECE Data Systems

Due to the great variety of ECE programs, funding streams, and governing bodies, the data collected and reported by these divergent groups are often poorly connected and not comparable. Many states are beginning to build and implement ECE data systems that pull longitudinal data from across the various parts of the ECE landscape. Federal supports for state policymakers' efforts to build these systems include the development of State Advisory Councils on Early Childhood Education and Care, as well as the inclusion of EC linkages in SLDS Grants, State Fiscal Stabilization Funds, and Race to the Top grants. Additional support and guidance are provided by the work of the multi-organization Early Childhood Data Collaborative (ECDC), as well as the National Education Data Model (NEDM).

K12 Education

K12 Governance

The Elementary and Secondary Education Act (ESEA) recognizes a "K12" education system separated into 56 state jurisdiction, each overseen by a state education agency (SEA). The head of an SEA can be called a superintendent, a commissioner of education, or a secretary of education. More generically, the head of an SEA is called a chief state school officer, or "Chief." SEAs recognize local education agencies (LEAs), which operate K12 schools.

SEAs have a range of oversight responsibilities for private and home schooling of school-age children. Some SEAs have no responsibilities in this area at all. Others ensure that students take state tests, track students uniquely, and undertake other such tasks. Some SEAs also oversee early childhood (EC) care and/or post-secondary (PS) higher education.

States may also be divided into regions, overseen by regional education agencies (REAs). REAs may also be called counties, Boards of Cooperative Educational Services *(*BOCES), or intermediary units.

All states set an age range for compulsory education. The youngest students are usually required to attend school when they reach age 5 or 6, and must remain in school until they reach the age of 15-18. However, the federal Individuals with Disabilities Education Act (IDEA) requires SEAs and LEAs to provide free and appropriate special education services to students found eligible between the ages of 3 and 21.

In general, school districts hire staff and assign teachers to one or more schools to instruct students in sections of courses taught in classroom locations, however, in some cases state agencies such as corrections and even federal agencies such as the Bureau of Indian Affairs may function as school districts.

K12 Enrollment: School/District

A student can be enrolled in a school/district as a member, resident, or service client. The member school/district is accountable for the student for Adequate Yearly Progress (AYP). The resident school/district has jurisdiction for where the student lives. Service school/district is where the student attends and receives services. Most states do not allow students to be a member of more than one school or district on any one day, although some states allow enrollment split by FTE.

K12 Enrollment: Programs

Students are recognized as participating in certain federal, state, and local 'reporting programs' for vertical reporting and counting. Reporting programs include:

1. Special Education
2. Title I
3. Title III Limited English Proficient (LEP)
4. Migrant
5. Homeless
6. Neglected and Delinquent
7. Career and Technical Education (CTE)

State Longitudinal Data Systems

When SEAs build enterprise information management systems, these systems are called state longitudinal data systems (SLDS). USED is strongly encouraging SEAs to expand their SLDSs to include P20 data. The term "P20" incorporates the domains of EC, K12, and PS education and may include workforce training, workplace participation, health, human services, and justice domains.

Special Education

Special education in the United States is governed by Parts B and C of the Individuals with Disabilities Education Act. IDEA Part C covers children from birth to age 3. IDEA Part B covers children aged 3-21. IDEA creates a federal mandate to provide students with learning disabilities with services documented in an Individual Education Program (IEP).

For children covered under IDEA Part B, the special education process is as follows:

Child Find

IDEA mandates a Child Find system to develop procedures to ensure the coordination of appropriate identification and delivery of services for students with suspected disabilities. Child Find requires school districts and states to identify, locate, and evaluate all students from birth to age 21 suspected of having at least one disability. Child Find activities extend to all personnel in the District. It is not the sole responsibility of Special Education staff and personnel. Parents, doctors, and other adults can also refer children for evaluation. As part of Child Find, school districts and states must keep track of where special education students are (i.e. if they switch schools or not), for as long as they receive special education services within the state. Child Find is an ongoing process.

Pre-IEP Intervention

Pre-IEP intervention, such as Early Intervening Services (EIS) and Response to Intervention (RTI), may be tried. EIS is a broad term that refers to a wide array of programs for students of different ages, grades, and needs. It is generally tried before the student is referred for evaluation. EIS may be as nonintrusive as a teacher making sure to write an assignment on the board or assigning reading groups by level. Because EIS is so similar to traditional teaching methods, parental consent is generally not needed. There are no federal standards or requirements for EIS, except that some form of EIS must be provided for students aged 0-21.

RTI falls under EIS and is permitted under the 2004 reauthorization of IDEA. It is a strategy for diagnosing specific learning disabilities that is based on the assumption that children with learning disabilities will continue to fall behind, even after repeated exposure to evidence-based teaching and interventions. It is similar to traditional teaching methods, and uses a three-tier system to diagnose students with disabilities based on the student's response to increasingly intensive interventions. The three tiers include:

1. Regular classroom instruction
2. Intensified small-group instruction
3. Individual instruction

Students still struggling at the third tier may be referred for a special education evaluation.

Referrals

If pre-IEP interventions are not successful, an adult may refer the child. A referral is a request to have a student evaluated for a possible disability or developmental delay. Parents, teachers, doctors, and other adults can refer children for evaluation. According to IDEA: "...either a parent of a child, or a State educational agency, other State agency, or local educational agency may initiate a request for an initial evaluation to determine if the child is a child with a disability." Information gathered during the referral process is used to determine whether the school will test the child to determine if he/she has a disability and needs special education. A date for the referral must be recorded.

There can be no more than 120 days between referral and determination of eligibility (including Referral, Consent to Evaluate, Evaluation (including assessments), and Eligibility).

Once the child is referred, there must be an age of majority determination. If the student has already reached the age of majority, this will determine whether he or she is legally responsible for giving consent for evaluations, the IEP, and other aspects of the special education process. If the child has not yet reached the age of majority, the age of majority determination will determine whether or not the student will eventually become legally responsible for giving consent as needed.

Parent Notification

At the time of referral, the school district must notify the child's parents or guardians in writing about the process it will follow to determine whether the child has a disability and needs special education services. If the school decides to test the child, it must notify the parents/guardians in writing about the assessment process and get written consent from them before the assessment begins. If the school decides not to test the child for special education eligibility, the school must notify the parents about this decision. Parents may challenge the school district's refusal to assess the child. As part of the parent/guardian notification process, the school must record how and when the parents were contacted, and the number of attempts at contact. The required number of attempts varies by state.

Parental Consent to Evaluate

The student's parent or legal guardian must give written consent before the first evaluation can occur. If consent is denied, the child returns to regular education. According to IDEA: "The agency proposing to conduct an initial evaluation to determine if the child qualifies as a child with a disability as defined in section 602 shall obtain informed consent from the parent of such child before conducting the evaluation. Parental consent for evaluation shall not be construed as consent for placement for receipt of special education and related services." Also according to IDEA, wards of the state are generally treated as follows: "In general.--If the child is a ward of the State and is not residing with the child's

parent, the agency shall make reasonable efforts to obtain the informed consent from the parent (as defined in section 602) of the child for an initial evaluation to determine whether the child is a child with a disability." Parents may refuse subsequent evaluation testing without necessarily jeopardizing a previously determined eligibility status.

Parental consent becomes official when it is received and time stamped or recorded by the district. The district determines who records the parental consent.

IEP Team

By law, an IEP team must include the following positions. However, a single team member can satisfy more than one role.

1. A person who can interpret evaluation results
2. Others with knowledge or special expertise about the child
3. Special education teacher or provider(s)
4. Parents or guardians (interpreter services must be offered whenever necessary and reasonable. Parents/guardians should notify the school of their need(s) ahead of time.)
5. Transition services agency representative(s) as appropriate. (Transition planning begins when the student is 14 or younger. Transition services begin when the student is 16 or younger.)
6. School system representative
7. Regular education teacher(s) (if there is any possibility that the child might participate in regular education)
8. Student (as appropriate)

Evaluation

IDEA requires that children be evaluated before they can receive special education services. Evaluations include interviews with parents and school staff. They may also include specific tests. Depending on the suspected disability/disabilities, they may include the following:

1. Review of students educational records
2. Review of student's work
3. Assessment of student's academic skills
4. Intellectual ability or IQ tests
5. Evaluation of student's developmental and social history
6. Social and emotional testing
7. Behavioral testing
8. Psychiatric testing
9. Adaptive behavior evaluation
10. Medical, vision, hearing and audiological examination
11. Fine and gross motor evaluation
12. Speech and language assessment
13. Observations

The results of an evaluation are used to determine if the child needs special education and related services help in school. The evaluation must:

1. Be done by trained and knowledgeable people
2. Be in all areas related to the suspected disability

3. Be in the child's native language unless it is clearly not possible to do so
4. The evaluation must not discriminate against the child.

All assessment evaluations requested by the school staff are free to the family. Reimbursement of additional, parent-requested testing may vary by state. If parents/guardians disagree with evaluation results, they have the right to an Independent Educational Evaluation (IEE), which they can ask the school system to pay for. Potential evaluators include:

1. Teachers
2. Educational diagnosticians
3. School psychologists
4. Speech pathologists
5. Medical professionals
6. Occupational and physical therapists
7. Counselors

The Initial evaluation must be completed and an eligibility determination must be made within 45 school days of receipt of parental consent to evaluate (or according to state guidelines). The initial evaluation is complete when the evaluators present their findings to parents and make their recommendations. Parents have the right to see all data that will be presented at the meeting 2 weeks in advance of the meeting in many districts, but the initial evaluation is not complete until recommendations are made at the initial team meeting.

IEP Team Meeting

An IEP Team meeting invitation must be sent to the parent/guardian. School staff must:

1. Contact all participants, including parents/guardians
2. Notify parents/guardians early enough that they will have an opportunity to attend
3. Schedule the meeting at a time and place that the parents/guardians and school both agree on
4. Tell parents/guardians the time, location, and reason for the meeting
5. Tell the parents/guardians who else will attend
6. Tell parents/guardians that they may invite people to the meeting who have knowledge or special expertise regarding the child
7. Record the contact method, number of contacts, and parent/guardian response(s)

Eligibility Determination

The child becomes eligible for Special Education services the moment the first evaluator determines that the child needs services in that evaluator's area of expertise. The determination of eligibility is at that point.

The determination of eligibility is different from the determination of a disability. For example, a child could be in need of speech services, but the disability is autism. However, that will not become clear until each evaluator has spoken. For this reason, the disability/disabilities are not determined until each evaluator has presented their findings. Determination of both eligibility and disability occur at the initial meeting. Once an evaluator determines eligibility in his/her portion(s) of the evaluation, he/she begins creating the corresponding part(s) of the IEP.

The IEP

The IEP must include several components:

1. Current performance
2. Annual goals
3. Special education services
4. Participation with nondisabled children
5. Participation in state and district tests
6. Dates and places when services will begin (how often they will occur, etc.)
7. Educational and testing accommodations and modifications
8. Transition services needs
9. Needed transition services
10. Age of majority
11. How progress will be measured

In creating the IEP, the team should consider the following:

1. Whether the child's behavior interferes with his/her learning or that of other students
2. Whether the child meets the federal standard for LEP (Limited English Proficiency)
3. Whether the child needs assistive devices
4. Whether the child has communication needs
5. Whether the child is deaf or hard of hearing
6. Whether the child is blind or visually impaired

The student should be educated in the least restrictive environment (LRE) possible. For some students, this may be in the general classroom with limited accommodations. For others, it may be in an entirely separate facility. For others still, it may be some combination of educational settings. A self-contained setting can refer to anything from a resource room to a specialized school or residential facility. Inclusion refers to the presumptive placement of students with disabilities into a general education setting. For example, students with disabilities might be educated in the regular classroom with limited accommodations from additional teachers. Inclusion is the term typically used to describe LRE today. Mainstreaming is more restrictive. For example, students might receive substantial services outside of a regular classroom setting, either individually or with other special education students. Mainstreamed students would be likely to join their regular education peers on a more limited basis, such as for certain subjects or non-academic periods. Although the terms "mainstreaming" and "inclusion" are frequently used interchangeably, the former more accurately describes special education in the 1990s.

The IEP will also discuss any accommodations and/or modifications that the child will receive. Accommodations (such as extra time) allow students to be assessed using the same tests and grading systems as their regular-education peers. Modifications change the rigor of a child's curriculum.

Under IDEA, a student must fall under one of the following disability categories in order to receive special education or related services. However, falling under one of these categories does not necessarily qualify a student to receive services:

1. Autism
2. Deafness
3. Deaf-blindness
4. Developmental delay
5. Emotional disturbance
6. Hearing impairment

7. Mental retardation
8. Multiple disabilities
9. Orthopedic impairment
10. Other health impairment
11. Specific learning disability
12. Speech or language impairment
13. Traumatic brain injury
14. Visual impairment, including blindness

Each evaluator determines eligibility in his/her portion(s) of the evaluation. The IEP team must complete the IEP within 30 calendar days of determination that the child is eligible for special education and related services. For compliance purposes, the IEP becomes complete at the moment when a final version is ready to be presented to the parents. It could then be mailed, presented in person, etc. A parent signature is not required in all states for the IEP to be considered complete, as far as the district is concerned. However, while the IEP is complete at this point, and the clock starts ticking on the 30 days, it cannot take effect without a parent signature.

The child becomes eligible for related services the minute the first evaluator says the child needs one in that provider's area of evaluation.

Placement

The placement recommendation explains the environment in which the student will receive special education and related services. Factors to consider include:

1. Time Spent for Services
2. Time non disabled
3. Percent Non-disabled
4. Special Education Age Grouping
5. Educational Environment (6-21)
6. Educational Environment (3-5, Early Childhood)
7. Placement Program
8. Whether the placement is implemented
9. Placement Program Start Date
10. Placement Program End Date
11. Group Size

There can be no more than 30 days between the eligibility determination and placement recommendation. Because the placement recommendation is part of the IEP, it is considered complete when the IEP is considered complete. Once the IEP is written, parents/guardians must receive a copy at no cost to them. Everyone who will help implement the IEP must also have access to it.

Parents/guardians must generally provide written consent to both the IEP and the placement. Once the IEP is finalized, accommodations must be provided as stipulated in the IEP. Services must generally be provided as soon as possible after the parent(s)/guardian(s) have consented to the IEP, unless the IEP has stipulated otherwise. If parent(s)/guardian(s) feel that the required services are not being provided, they should ask if the school agrees. If so, parents can ask for a variety of measures such as:

1. Reimbursement for parent/guardian-sponsored services during the period when the school was required to provide them
2. Extra services (over vacations if necessary) to make up missed sessions
3. An extension of the eligibility period

If the school disagrees with parent/guardians' interpretation or otherwise fails to provide required services, parents can speak to the state Department of Education (DOE) about the best course of action. Exact procedures vary by state, but a due process hearing is generally sufficient.

Progress Measuring and Reporting

Evaluation and reporting on student progress is measured against the yearly goals set forth in the child's IEP. Special education students must be evaluated at least as frequently as their nondisabled peers are. Parents/guardians must be informed of whether their child is on track to meet his/her yearly goals. Parents/guardians of special education students must be informed of their children's progress at least as often as parents/guardians of the student's nondisabled peers learn of their children's progress. The IEP must be reviewed at least once each year to determine whether the child is achieving annual goals. The IEP team must revise the IEP to address the following:

1. Any lack of expected progress
2. Results of any re-evaluation
3. Information provided by the parents
4. Anticipated needs

The year begins on the begin date of the IEP. The IEP begin date is the date that the IEP is completed. However, the parent signature determines the service begin date. The IEP end date is always one year from the IEP completion date. The year can be 366 days, i.e. Nov 1-Nov 1. The parent or the school can call for another meeting at any time, but it must be at least once each 366 days.

Re-evaluation

According to IDEA, re-evaluations must occur "not more frequently than once a year, unless the parent and the local educational agency agree otherwise; and at least once every 3 years, unless the parent and the local educational agency agree that a reevaluation is unnecessary." In some cases, such as blindness, a child may remain eligible for special education and related services without being re-evaluated. The re-evaluation date is determined by the 3-year date from the initial IEP begin date. The re-evaluation clock starts ticking when the initial IEP begin date has been determined. Parental consent to re-evaluate must be given in writing again 45 school days before the re-evaluation date, or the district is out of compliance.

Child Exits Special Education

The process repeats until child exits Special Education. Possible exit reasons include:

1. Graduating with a diploma
2. Graduating with a certificate of attendance
3. Dropping out
4. Reaching maximum age
5. Moving, known to continue
6. Moving, known not to continue
7. No longer receiving special education services
8. Death

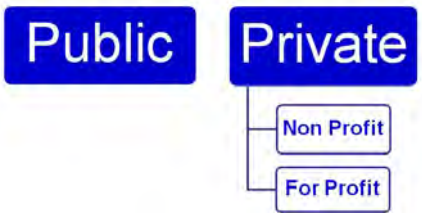
Postsecondary Concepts

Postsecondary Institutional Structure

Postsecondary education, also known as higher education, serves a large and diverse student body comprised of individuals studying at levels the secondary level. It is a very decentralized sector made up of a broad range of different of institutions offering a variety of programs of study.

The Carnegie Classification of Institutions of Higher Education is a system for classifying, or grouping, postsecondary institutions in the United States. The system facilitates educational research and analysis by identifying and categorizing groups of roughly comparable institutions. In 2005, the system grew to include multiple, parallel classifications in order to provide flexibility in conducting educational research, these include classification by Undergraduate Instructional Program, Graduate Instructional Program, Enrollment Profile, Undergraduate Profile, Size and Setting and the Basic Classification. Today, the system classifies all accredited, degree-granting postsecondary institutions in the United States that are represented in the National Center for Education Statistics Integrated Postsecondary Education Data System.

Institution Type. Within the Carnegie Basic Classification System and the Integrated Post Secondary Education Data System (described later in this section), two of the main defining characteristics of a postsecondary institution are type of control and the length of study. First, postsecondary institutions may be divided into three different categories based on the type of control under which they operate. Namely, a postsecondary institution may be considered a **public institution**, a **private nonprofit institution** or a **private for profit institution**. Any of these institutions may join an association with other postsecondary institutions, such as state systems of public institutions or consortiums of affiliated private institutions.



Each control type falls into a certain definition. First, a public institution is run by publicly elected or appointed officials and is funded primarily by public funds. Conversely, a private institution is controlled by an individual or agency other than the state or federal government; these institutions may receive federal or state funding but do not rely primarily on public support. Among private institutions, a private nonprofit functions as a tax-exempt non-profit entity registered under section 501(c)3 of the Internal Revenue Code; these institutions are primarily funded through enrollments and endowments. A private for-profit institution, on the other hand, is a profit-seeking institution funded primarily through enrollment. Postsecondary institutions may also receive funding to support their research activities.

In addition to classification by operational control, postsecondary institutional type can be categorized according to program offerings and length of study. These categories include **less-than-two year**

institutions (often known as technical colleges), **two-year institutions** and **four-year institutions**. Each of these institutional types offers varying levels of degrees in different program areas.

Award Level. Various academic awards are available through postsecondary education, even within the same institution. Among degree levels below the baccalaureate, there are a variety of undergraduate award types. There three different levels of **certificate** and **diploma** awards based on the standard amount of time to completion: less than one year, between one and two years and between two and four years. An **associate's degree** normally requires two years to complete, whereas a **bachelor's degree** typically requires four years of full-time studies.

At the graduate level, there are various types of advanced education award types. A **post-baccalaureate certificate** requires the equivalent of 18 semester credit hours beyond the bachelor's degree but does not meet the requirements of a master's degree. A **master's degree** typically requires one to two years of additional course work beyond a bachelor's degree. After a master's degree, a student may earn a **post-master's certificate**, which requires the equivalent of 24 semester credit hours beyond the master's degree but not meeting the requirements of a doctor's degree. Finally, a **doctorate or doctor's degree** is the highest level of advanced education; these may be categorized as a research or scholarship doctorate, a professional doctorate or other type of doctorate award.

Nomenclature. In this multifaceted sector, postsecondary institutions may be known under a variety of names. A **university** is composed of diverse units called schools or colleges, whereas a **college** usually (but not always) focuses on one academic sector. Junior colleges and **community colleges** typically have lower entrance requirements and often fill a variety of roles, offering remediation, degrees and certificates, vocational and job training, continuing education and the possibility of transfer to four-year colleges and universities. They are traditionally two-year institutions, but four-year junior and community colleges are becoming more common. A **junior college** is more likely to be a private institution, whereas a community college is typically public and focused on serving students in a particular geographic area.

Internal Structure. Postsecondary institutions are also very diverse in terms of their internal structure. For example, a postsecondary institution may have one campus or many, or, in the case of distance and e-learning programs, it may not have any physical campus. They may operate on a variety of different calendar systems, such as a semester, quarter, trimester, 4-1-4 or continuous calendar system. Among private postsecondary institutions, institutions may have a religious affiliation or may be gender-specific, offering enrollment to only male or female students. These are just a few of some of the internal structural differences among postsecondary institutions.

Research. A postsecondary institution may also be defined by its emphasis on research, or whether or not it conducts research at all. Some postsecondary institutions invest in conducting original research in addition to teaching and direct student education. In such cases, an institution utilizes a portion of its human, financial and infrastructural resources to study a particular subject or field in order to increase the body of knowledge in that area. In particular, research plays a major role in programs that offer a research- or scholarship-oriented doctor's degree. To support research among postsecondary institutions, the federal government provides assistance often in the form of grants.

Institution Identifiers. In the varied context of higher education, postsecondary institutions are identified by a unique code. For example, postsecondary institutions may be identified by their FICE code, a six-digit code built in the 1960s by the Federal Interagency Committee on Education. While the FICE code is still in use in other contexts, it is no longer used in IPEDS, which now relies on the Office of Post-Secondary Education identification (OPE ID). The OPE ID is a 6-digit number followed by a 2-digit suffix used to identify branches, additional locations, and other entities that are part of the eligible institution. The existence of postsecondary identification systems helps to standardize national and state level reporting efforts.

Postsecondary Regulation

Within the **U.S. Department of Education (USED)**, the **Office of Postsecondary Education (OPE)** develops federal postsecondary education policy, oversees programs that improve access to quality postsecondary education, and collects data on various topics within postsecondary education. Although the OPE has a role in postsecondary education, the United States has no centralized authority exercising single national control over postsecondary educational institutions and no centralized database with

information on all citizens' postsecondary attainment. In general, institutions of higher education may operate with considerable autonomy, with oversight from accrediting bodies that are given authority from the government.

Types of Accreditation. Through the accreditation process, an institution must demonstrate that the education it provides meets acceptable levels of quality. Although the U.S. Department of Education does not accredit institutions itself, the Secretary of the DOE is legally required to publish a list of accrediting agencies deemed to be reliable authorities on the quality of postsecondary education. The U.S. Department of Education also allows state agencies to approve postsecondary vocational programs and nurse education. Two agencies under the USDE grant approval of smaller national and regional accrediting agencies: the Counsel on Higher Education Accreditation (CHEA, known previously as CORPA and COPA) and the Association of Specialized and Professional Accreditors (ASPA). Recognition of an accrediting agency by CHEA confers academic legitimacy, while recognition by the USED is required for accreditors that review institutions or programs that seek eligibility for federal student aid monies.

The U.S. accreditation system is decentralized and complex. Within the accreditation industry, the private, nonprofit accrediting agencies may be regional accreditors, national faith-related accreditors, national career-related accreditors or programmatic accreditors. Although accrediting agencies vary in terms of the rigor of their accreditation standards, the process typically includes self-study, peer review, site visit, and judgment by the accrediting organization and periodic external review. The process considers not only academic content and delivery, but also the institution's internal processes and fiscal and administration capacity, among other things. The accreditation process is funded by annual dues paid by institutions and programs that are accredited and by fees for the accreditation reviews themselves. Ultimately, the accreditation process is central in ensuring academic quality, providing eligibility for federal and state funds, easing student transfer between institutions, and engendering private sector confidence in evaluating the credentials of job applicants.

States organize higher education governance in an assortment of ways. There are three primary state governance structures recognized for state higher education: Governing Board States, Coordinating Board States and Planning/Regulatory/Service Agency States. Governing boards tend to have more direct oversight of state funded institutions; coordinating boards have various levels of authority in coordinating the activities of state funded institutions; and planning, regulatory and/or service agencies may help support state funded institutions but have no governing or coordinating responsibilities. These bodies have different names, structures and leadership powers, and the variation between states, even those that utilize the same structure, are significant.[11]

At the federal level, the **Higher Education Act (HEA)** authorizes federal student aid programs, aid to postsecondary institutions, services to help students complete high school and enter higher education, and aid to improve K-12 teacher training at postsecondary institutions. It was first signed in 1965 and reauthorized most recently in 2008 under the Higher Education Opportunity Act. The Student Right-to-Know and Campus Security Act (1990) amended the HEA and requires postsecondary institutions to

[11] McGuinness, A. (2003). ECS State Notes: Models of Postsecondary Education Coordination and Governance in the States. Retrieved online from ECS at: http://www.ecs.org/clearinghouse/34/23/3423.pdf.

collect specific information on campus crime statistics, campus security policies, and institutional completion or graduation rates. This information is known as the Student Right-to-Know (SRK) data.

Two sections of the Higher Education Act have particular importance in the context of postsecondary regulation. **Title II of the HEA** calls for special reporting on the quality of teacher education programs at the postsecondary level. Additionally, under **Title IV of the HEA**, the federal government provides a variety of financial aid and support for postsecondary students and institutions. A Title IV Institution has a written Program Participation Agreement (PPA) with the Secretary of Education that, under certain conditions, allows the institution to participate in any of the Title IV federal student financial assistance programs, other than the State Student Incentive Grant (SSIG) and the National Early Intervention Scholarship and Partnership (NEISP) programs. Significantly, postsecondary institutions that want to receive funding through Title IV of the HEA must comply with specified federal reporting requirements.

Postsecondary Reporting and Data Collection

Because participating Title IV institutions submit to regular federal reporting, the Higher Education Act effectively has a large role in postsecondary education reporting and data collection exercises. Among other things, the federal government monitors incidents of fraud and abuse of Title IV funds, student loan default rates and pass rates on professional licensing exams for teacher education programs. Institutions participating in Title IV of HEA must also provide information on Student and Financial Assistance Programs, Campus Security and Safety, Equity in Athletics, Quality of Teacher Preparation Programs and Accreditation data. The National Center for Education Statistics (NCES) is the primary federal entity for collecting and analyzing data related to education.

Under NCES, the **Integrated Postsecondary Education Data System (IPEDS) is** the principal method for the federal government to collect data regarding the state of higher education in the United States. It is the core postsecondary education data collection program for the National Center for Education Statistics (NCES) under the U.S. Department of Education. Approximately 6,800 postsecondary institutions complete annual IPEDS surveys on topics including enrollment, graduation rates and finances. Sometimes state systems will perform this reporting for individual institutions. It is important to note that IPEDS reporting is done at an aggregate level and does not contain specific data or record-level reporting. Moreover, the surveys do not take into account students who need substantial remediation or who never intended to do more than take a few classes, nor do they consider graduation rates for non-traditional or transfer students. They surveys also do not address online education, a growing area in the postsecondary sector. However, despite key shortcomings, IPEDS remains the key tool in postsecondary reporting and data collection.

Title II of the Higher Education Act requires three annual reports on the quality of teacher preparation. Schools of education must report to states the pass rates of their graduates on state certification assessments and other program data in April. States in turn are required to report to the U.S. Department of Education information on certification and licensure requirements, pass rates on state assessments disaggregated and ranked by institution, and other information in October. Finally, the Secretary of Education must prepare an Annual Report on Teacher Quality for Congress and the public. Under the federal level, the HEA requires States to maintain a process to identify low-performing

teacher education programs. If a postsecondary teacher education program is identified as low performing, the institute will no longer be able to participate in Title IV funding.

Beyond IPEDS and Title II requirements, there are a variety of reporting initiatives focusing on postsecondary education. The **National Postsecondary Student Aid Study (NPSAS)**, under NCES, examines how students and their families pay for higher education. The study draws on institutional records, government databases and student interviews. Its data serves as the baseline year for the NCES Baccalaureate and Beyond (B&B) study and the Beginning Postsecondary Students Longitudinal Study (BPS). The National Center for Education Statistics maintains other postsecondary research initiatives as well, including the National Education Longitudinal Studies (NELS) Program, which studies individuals' educational, vocational and personal development through postsecondary years; the National Household Education Surveys Program (NHEP)**,** which provides data on the educational activities from early childhood to adult education; the Postsecondary Education Quick Information System (PEQIS), which collects data from a sample of 1,600 postsecondary institutions on focused issues for program planning and policy formulation; and data collection on career and technical education under the Carl D. Perkins Career and Technical Education Improvement Act. These NCES surveys function as research studies administered to students and other stakeholders; they rely very little on data collected from the institutions themselves.

Some states also collect data on statewide higher education, although reporting standards vary from state to state. Texas, for example, has collected information from postsecondary institutions for decades. The Texas Higher Education Coordinating Board collects data from postsecondary institutions through the Coordinating Board Management (CBM) reports. Virginia's Department of Education collects data on adult learners (including those at the postsecondary level) as well as traditional forms of postsecondary education. Some state agencies of higher education use their data collection systems to feed data marts or data warehouses that provide insight into the state's postsecondary education processes and outcomes.

High school feedback reports help align secondary schools and postsecondary institutions by providing K-12 schools with data on the success of their former students in higher education. As the Data Quality Campaign accounts, "Students from a given high school may attend colleges throughout a state or region, [and so] these reports are most effectively developed at the state level." States may or may not choose to utilize these reports and may develop them to include different data. Generally, though, high school feedback reports] provide information on how students perform academically in terms of college readiness, academic performance, and retention. These reports often include information on the proportion of students from a particular secondary school who, upon entering postsecondary education, are required to take remedial courses that usually do not provide credit toward academic degree programs and are designed to remedy a lack of knowledge or correct a skill deficiency at a postsecondary institution. The feedback reports help to identify areas for improvement at the secondary level.

In the context of these varied data collection efforts, there have been a variety of initiatives to create common data standards and improve data collection methods. The **Common Data Set (CDS)** is a

collaborative effort by publishers (including Peterson's and U.S. News and World Report), data collectors, and higher education entities (including the College Board) to standardize survey questions and definitions in order to reduce the reporting burden on postsecondary institutions. CDS provides a uniform set of data items, definitions, and calculation protocols for use in collecting and exchanging student information. Its resulting database of all responses is not publicly available for download.

The **Voluntary System of Accountability (VSA)**, developed in 2007, provides basic, comparable data on public four-year institutions. The initiative was sponsored by the Association of Public and Land-grant Universities and the American Association of State Colleges and Universities, and the information generated by this system is available through a common web report called the **College Portrait**. Similarly, the American Association of Community Colleges is developing a **Voluntary Framework of Accountability (VFA)** to measure processes and outcomes specific to community colleges.

The **National Governors Association** has also launched an initiative called **Complete to Compete** to create a set of common postsecondary metrics that will measure states' performance in both postsecondary educational progress and outcomes. As part of the initiative, the NGA has convened a Work Group on Common College Completion Metrics to make recommendations on the postsecondary data elements that all states should collect and report publicly. The recommended outcome metrics include degrees and certificates awarded, graduation rates, transfer rates, and time and credits to degree. The progress metrics include enrollment in remedial education, how students fare after they leave remedial education, success in first-year college courses, credit accumulation, retention rates, and course completion.

The Complete to Compete initiative takes into account important data collection and policy considerations as well. First of all, the initiative works to fill the gap left by other postsecondary data collection systems, which do not account for part-time and transfer students in aggregate metrics on postsecondary completions. Complete to Compete also factors in the need to disaggregate higher education data on elements such as income level and remedial course enrollment. Finally, NGA's Work Group on Common College Completion Metrics recommends that states collect and report on additional context metrics pertinent to policymaking decisions. These metrics include the total first-time undergraduate enrollment, the annual ratio of postsecondary awards granted per 100 full-time equivalent undergraduate students and the annual ratio of postsecondary awards granted relative to a state's population with a high school diploma.

The **Access to Success Initiative (A2S)**, a project of the National Association of System Heads and The Education Trust, is working with a common set of postsecondary metrics to track the college-going and graduation gaps for low income and minority students. The initiative includes twenty-four public higher education systems that have agreed to halve these gaps by 2015. Each participating system has completed a baseline report that includes information such as the graduation rates of low-income and nontraditional students – metrics which are not covered in other public reports. The A2S systems are drafting their own improvement plans and have agreed to track their progress in regular two-year increments based on the initiative's common metric system.

Finally, a national initiative known as **Achieving the Dream (ATD)** has begun work with postsecondary data elements around issues affecting community colleges. Through an effort known as **Community College Count**, the organization collects data from participating colleges and states on topics including enrollment, graduation rates, revenue and financial aid. Distinctively, ATD tracks record-level received from participating institutions using non-Social Security Number unique identifiers. The organization is using this data to expand knowledge about effective strategies for student success, focusing on minority and low-income students in particular. Through its efforts, ATD aims to support institutional and policy level change, including work to identify effective innovations, align standards and create accurate, incentivized performance measures.

Institutional Research. Most postsecondary institutions maintain an Office of Institutional Research which supports the institution's data collection and assessment efforts. While an Office of Institutional Research has an important role in internal evaluation and planning, it is also serves as the gatekeeper for external data collection efforts. An Office of Institution Research gathers information from internal and external sources (e.g., students, parents, faculty, etc.) and coordinates the institution's response to a variety of reports, such as the IPEDS report, accreditation reports and Student Right to Know reporting. An institution's financial aid office, registrars and admissions office maintain and report information as well.

Postsecondary Educational Pipeline

Federal, state and other reporting efforts provide insight into the opportunities and challenges that exist along the educational pipeline, which in higher education involves the transitions from secondary school into postsecondary school and from postsecondary admissions to completion of a degree. The success of an educational pipeline may be measured by the proportion of secondary students who graduate from secondary school, enroll in a postsecondary institution, persist in their enrollment after year one, and complete their postsecondary education in a specified amount of time. Ultimately, these students enter the workforce.

The National Center for Public Policy and Higher Education has led research on improving the success of educational pipelines. Similarly, in a study on low levels of degree completion in California community colleges, the Institute for Higher Education Leadership and Policy identified key student milestones and enrollment patterns that correlate with successful degree completion. IPEDS and other federal and state level reports also provide rich information on graduation rates and other elements central to the postsecondary educational pipeline.

Postsecondary Student Lifecycle

In the postsecondary context, the lifecycle of a student is very complex. It begins with the first contact between the student and postsecondary institution and extends beyond graduation. In the simplest model of the student lifecycle, a student moves through key stages as a **prospective student**, **applicant, admitted student**, **enrolled student**, **graduate** and **alumnus/alumna**. In some cases, he or she may also become a **donor** to the postsecondary institution attended.

The admissions process often marks the start of the postsecondary student lifecycle. Just as there is no typical postsecondary institution, there is similarly no typical admissions process. In order to enroll, a student may be required to apply to the institution itself and/or to a school or program within the institution. The Common Application provides a common admissions form that students may submit to any number of the over four hundred participating undergraduate institutions. Alternatively, some schools will require a tailored supplement in addition to the Common Application, while others use only a custom application.

Admissions selectivity varies widely. Some institutions, schools or programs offer open enrollment, whereby anyone who applies is accepted; others accept fewer than 10% of applicants. In the case that there is not open enrollment, admission may be based on a variety of factors, including previous academic performance, standardized test scores, application essay, interview, alumni relationships, athletic skills, special talents, geographic location and ethnic background. Other factors, such as professional or research experience, may also be considered. The number of factors assessed in the admissions process and the weight accorded each one differs greatly according to the selectivity of the institution, school or program and the level of the award being sought.

In postsecondary admissions, the emphasis placed on standardized tests varies widely, and a broad range of tests exist for different purposes. While some institutions do not require and/or do not consider standardized test scores, other institutions require such assessments and favor students with higher scores. In order to apply for some undergraduate, certificate or diploma programs, prospective students may need to complete the GRE, the SAT I or SAT II Subject Tests, the ACT, and/or the TOEFL, among other tests. Beyond the undergraduate level, prospective students may be required to complete the GRE General Test or Subject Tests or a program-specific test, such as the GMAT, LSAT or MCAT. These standardized tests are created and administered by a variety of different organizations, including the Educational Testing Service and the College Board; students typically pay a fee in order to take the assessment.

Students may enter postsecondary education having already earned postsecondary credits. The College Board's Advanced Placement (AP) Program offers secondary students the opportunity to participate in college-level courses taught in high school. As defined by NCES, students enrolled in AP courses "may take an examination at the completion of the course; acceptable scores allow students to earn credit toward a postsecondary degree, certificate, or other formal award." Minimum scores and process for awarding credit varies between different postsecondary institutions.

The International Baccalaureate (IB) is a non-profit educational foundation offering rigorous academic programs for students aged 3 to 19. IB Diploma students must take an exam before graduating; acceptable scores allow these students to earn credit toward a postsecondary degree, certificate, or other formal award. Minimum scores and process for awarding credit varies between different postsecondary institutions.

Dual enrollment may also allow students to earn postsecondary credit before officially applying to or enrolling in postsecondary school. Broadly defined, dual enrollment occurs when a student is concurrently enrolled in two separate institutions. This may occur across postsecondary institutions, as

when a community college student is also enrolled in courses at a senior college, or when a student at one university is also enrolled in courses at a nearby associated institution. As explained by NCES, dual enrollment can also occur when a secondary student enrolls in a postsecondary course while still enrolled in secondary school. Successful completion of a dual enrollment course may allow secondary students to earn credit toward a postsecondary degree, certificate or other formal award.

Some institutions maintain a Recognition of Prior Learning (RPL), Prior Learning Assessment and Recognition (PLAR) or Prior Learning Assessment (PLA) process. This allows students to earn postsecondary credit by demonstrating learning acquired outside the classroom. Outside of formal instruction, students may acquire postsecondary learning in a variety of ways, including corporate or military training, civic activity, professional experience or independent study. OpenCourseWare (OCW), for example, are course materials created by postsecondary institutions and shared freely in a virtual learning environment on the internet. These outside sources may support individuals in self-paced learning and acquisition of credit through an RPL or similar process.

Institutions may assess prior learning in a variety of ways, in some cases depending on the nature of the prior learning. First of all, there are many standardized exams that assess prior learning, including the College Board's College Level Examination Program (CLEP), DANTES Subject Standardized Tests (DSST) and the Excelsior College Examination Program. The American Council on Education (ACE) also administers the General Educational Development (GED) testing program, which measures whether a person has the skills and knowledge expected of secondary school graduates. Alternatively, an institution or program may design and conduct an independent assessment, it may require a portfolio demonstrating experiential learning, or it may directly conduct an evaluation of a local training program. Some civilian and military training programs also provide guides or credit recommendations relevant to an RPL process.

Once admitted to an institution, students fall into various disaggregating categories. For example, data collection initiatives often require information on student age and part-time versus full-time enrollment. In an undergraduate setting, students older than 24 years or enrolled on a part-time basis are considered non-traditional students. Many reports require additional data on student sex, race or ethnicity, status as a first-time student and status as a first-generation student. It is also important to distinguish been U.S. citizens and foreign students who are studying in the U.S., as the latter category is growing rapidly and does not fall under the standard Federal rules. The Student and Exchange Visitor Information System (SEVIS) is a special data collection program that monitors foreign students enrolled at any level in the U.S. education system.

Students attending postsecondary education in the U.S. may also choose to study abroad, or in other words, may pursue postsecondary educational studies in a country other than the U.S. In some cases, a student may remain enrolled in his or her U.S. based institution and continue taking courses offered by that institution, even while studying abroad. For example, a student may attend courses at a foreign location where the postsecondary institution manages the staff, facilities and overall educational offering. In other cases, a student may remain enrolled in his or her U.S. based institution while taking

courses offered at a pre-approved program in another country. Students also may directly apply for enrollment in the foreign host institution.

In the postsecondary context, the student lifecycle is not determined by an individual's age. While many students enroll in postsecondary education soon after completing secondary school, many others do not immediately enroll, some may enroll in middle or high school, and individuals may continue their postsecondary education in various ways throughout their lives. Adult education includes opportunities at both the secondary level (e.g., GED preparation courses) and postsecondary level. Continuing education is a form of adult education for individuals who at least have a secondary education or some form or postsecondary education. The domain includes degree credit courses, non-degree courses, workforce or professional training, personal enrichment courses and self-directed or experiential learning. Adult and continuing education programs often offer course options that allow students to maintain a job while attending courses on nights or weekends.

To understand the events that occur as individuals progress through the student lifecycle, data collection agencies often consider aggregate data on courses, credit hours, grades and graduation rates. To standardize such reporting, the Classification of Instructional Programs (CIP) provides a taxonomy that supports the tracking, assessment, and reporting of fields of study and program completions activity. CIP was originally developed by the U.S. Department of Education's National Center for Education Statistics (NCES).

While many groups collect data on the internal programs and operations of a postsecondary institution, these institutions exercise autonomy over the curriculum, calendar, requirements for graduation and other core aspects of the educational structure. The higher education system is subject primarily to reporting requirements rather than actual operational regulations. However, in order to remain eligible for Title IV funding the HEA, schools must maintain their accreditation status.

Postsecondary Financial Aid

Most postsecondary institutions require that students pay tuition, or a fee for instructional services, plus other fees for services or materials provided outside of instruction; books and similar resources are usually purchased separately. Some institutions also offer room and board options. Taking all expenses into account, the cost attending a postsecondary institution varies widely across different locations and different institutions. Despite the vast price variation, recent decades have seen a steady trend in the cost of postsecondary education, where increases in postsecondary prices have exceeded the growth in inflation and family income. Students meet the cost of attending a postsecondary institution in a variety of ways, including self-funding, non-federal aid and federal aid.

Non-federal aid includes, most importantly, state financial aid programs, including state-funded grants, scholarships and fellowships, loan forgiveness programs (including conditional scholarships), work study programs and guaranteed loans. Students may also receive grants, scholarships and fellowships offered by a private entity, such as the postsecondary institution or a foundation. Grants, scholarships and fellowships are typically reserved for students with special qualifications (academic, athletic or artistic talent), members of under-represented groups, people who live in certain geographic areas, students

interested in special fields of study, who have certain affiliations or who demonstrate financial need. Students may also apply for loans offered by private entities, such as banks and other financial institutions, postsecondary institution and private foundations.

Students may also receive various forms of federal aid. Federal aid includes grants, loans, work-study support. Some federal aid is need-based, some is not. Major programs include the Federal Pell Grant (need-based aid for undergraduate students) and Federal Subsidized and Unsubsidized Direct Loans. A second category of aid programs are known as campus-based programs because the funds are allocated to postsecondary institutions for award to students. These programs include the Federal Supplemental Educational Opportunities Grant (SEOG) and the Federal Perkins Loan. Federal assistance for postsecondary education is also available through tax benefits, such as the Hope Scholarship tax credits, Lifetime Learning tax credit, tax deduction for PSE expenses plus federal income tax benefits for education savings accounts, qualified tuition programs, education savings bonds.

The federal need analysis system defined in Title IV of the Higher Education Act determines student eligibility for, and level, of Title IV student aid. The key element in the need analysis system is a student's expected family contribution (EFC), determined when a student completes the Free Application for Federal Student Aid (FAFSA). Students enrolled on less than a half-time basis or enrolled in a non degree- or certificate-granting program do not qualify for Title IV loans. Given the rising costs of postsecondary education and the varied means by which students may fund their education, IPEDS and other reporting initiatives collect extensive data on both postsecondary finances and student financial aid.

Postsecondary Stakeholders

In the decentralized and diverse postsecondary education sector, there are a variety of key stakeholders outside of the federal and state government and the institutions themselves. Several of these actors have particular influence in the area of postsecondary data collection. For example, the **Postsecondary Electronic Standards Council (PESC),** as explained on its website, "is a non-profit umbrella association of postsecondary institutions; college and university systems; professional and commercial organizations; data, software and service providers; non-profit organizations and associations; and state and federal government agencies." It was established in 1997 at the National Center for Higher Education. PESC promotes the implementation and usage of data exchange standards in the postsecondary context.

The **State Higher Education Executive Officers (SHEEO)** is self-described as "a nonprofit, nationwide association of the chief executive officers serving statewide coordinating boards and governing boards of postsecondary education." Among other things, SHEEO "promotes cooperative relationships with federal agencies, colleges and universities, and higher education and other associations in the collection and exchange of data and information, development of standard definitions and practices, conduct of studies, and development of higher education in the public interest."

The **National Student Clearinghouse** is a non-profit organization which, as explained on its website, provides "educational record verification for participating schools while maintaining confidentiality in compliance with the Family Educational Rights and Privacy Act (FERPA)." Student loan providers,

employers, student credit issuers, student health insurance providers, the federal government and others access the Clearinghouse's registry. More than 3,300 postsecondary institutions, enrolling 92% of US college students, and hundreds of high school districts nationwide participate in the Clearinghouse. The postsecondary institutions, listed by FICE code, include community and technical colleges.

Beyond actors involved in postsecondary education data and information collection, there are a wide variety of actors that have noteworthy influence on the postsecondary sector. **EDUCAUSE** is a nonprofit association which aims to improve postsecondary education by promoting the use of information technology. As described on its website, "EDUCAUSE programs include professional development activities, applied research, strategic policy advocacy, teaching and learning initiatives, online information services, print and electronic publications, special interest collaborative communities, and awards for leadership and innovation."

The **National Association of College and University Business Officers** (NACUBO) is the self-described "thought leader and authoritative resource for business and financial management of higher education" and is striving "to advance the economic viability and business practices of higher education institutions." It offers membership to institutions including as schools and other organizations. The organization's work includes research and communications as well as initiatives such as the development of a benefits estimator for the GI Bill as it pertains to postsecondary education.

American Association of Collegiate Registrations and Admissions Officers (AACRAO) provides leadership in postsecondary academic and enrollment services in order to advance higher education. As explained on its website, "AACRAO is a nonprofit, voluntary, professional association of…higher education admissions and registration professionals who represent more than 2,600 institutions and agencies...around the world." Among other things, it provides professional development opportunities for its membership.

Possessing particular importance in the postsecondary sectors, the **American Council on Education** is described on its website as "the major coordinating body for all of the nation's higher education institutions. Through its work, ACE "seeks to provide leadership and unifying voice on higher education issues and to influence public policy through advocacy, research and program initiatives." The organization represents leaders of all types of accredited, degree-granting institutions; its member institutions serve 80 percent of the postsecondary population.

Finally, there are a variety of organizations working to address how institutions – including postsecondary institutions – connect and share data with one another. **Internet2** is a nonprofit advanced networking consortium including postsecondary institutions as well as a variety of corporations, government agencies and research laboratories; the organization is leading innovations in networking capabilities among its members. The **InCommon Federation** is working to support U.S. education and research by creating shared management of access to online resources. Other key elements in this movement include Authentication and Identity Management. These organizations and others are shaping the way a common data collection model might work in the postsecondary context.

Workforce

Background

The term **workforce** is defined as consisting of the workers engaged in a specific activity, business or industry or the number of workers who are available to be assigned to any purpose as in a nation's workforce.

Workforce information refers to providing information on state and local labor market conditions; industries, occupations and workforce characteristics; skills needs related to certain business areas, employer wage and benefit trends; short- and long-term industry and occupational projections; worker supply and demand; and job vacancies survey results. Workforce information can also include workforce availability; business turnover rates; job creation; and job identification of high growth and high demand industries at the local level.

The public workforce system is a network of federal, state, and local offices that function to support economic expansion and facilitate the development United States workforce. The system is designed to create partnership with employers, educators, and community leaders in order to foster economic development and high-growth opportunities in regional economies so that businesses find qualified workers to meet their present and future workforce needs.

Multiple federal agencies administer funding for various workforce development programs. These agencies include the Departments of Agriculture, Commerce, Education, Health and Human Services, Housing and Urban Development, Labor, Transportation, and Veterans Affairs. The Employment and Training Administration (ETA) is responsible for administering federal government job training and worker dislocation programs, federal grants to states for public employment service programs, and unemployment insurance benefits. State and local workforce programs play an important role in making sure that federal workforce programs are successfully administered.

The Bureau of Labor Statistics (BLS) of the U.S. Department of Labor is the primary Federal agency tasked with measuring labor market activity, workforce conditions, and price fluctuations in the economy. BLS is also responsible for collecting, analyzing, and disseminating essential economic information to facilitate public and private decision-making.

Workforce Data Collection

Workforce administrative data are collected from workforce programs that provide employment, training, and related services, as well as from programs that provide **Unemployment Insurance** (UI) benefits and collect Federal Unemployment Tax Act payroll taxes. Employment and training data are collected from a variety of workforce programs that provide employment and/or training services to both employed and unemployed workers. These services also are offered to new entrants to the labor market with the exception of the UI program services. Each service provides the transaction information provided to each participant, such as training receipt, job referral, job search assistance, as well as data on their personal characteristics.

On a monthly basis, states report on the number of participants served under the Workforce Investment Act (WIA) Adult, Dislocated Worker, and Youth programs, and the Wagner-Peyser Employment Service program. The term Workforce Investment Standard Record Data (WIASRD) is an individual-level data set containing information reported annually by states to the Employment and Training Administration. These data include detailed information on program completers (e.g. exiters) such as demographics, types of services received, and outcomes attained as a result of participating in the program.

The UI program is a state-federal partnership, financed by two different employer taxes. First, state employment security agencies (SESA's) collect quarterly employer contributions (taxes) in order to pay unemployment benefits to eligible, unemployed workers. Secondly, the federal government funds the administrative costs of the employment security programs in each state through a quarterly federal unemployment tax (FUTA). UI administrative data is provided by state unemployment insurance programs and are related to UI benefit payments and to the UI payroll tax system. UI wage record reports from quarterly employer filings of UI tax forms on covered establishments' wage and salary employment are a key source of data on the employment and earnings of American workers.

These **wage records** include the following data:

1. The number of workers
2. The workers' name
3. Social Security number
4. Earnings
5. Employers' industry code and location

UI wage records represent a comprehensive data source given that over 97 percent of wage and salary employment is in covered establishments. Additionally, the UI program collects data on how many people that apply for UI benefits, collect benefits, as well as the amount of benefits paid. States report UI data to the U.S. Department of Labor (DOL) on a monthly and quarterly basis under the Unemployment Insurance Required Reports (UIRR) system.

Federal statistical agencies use the 2010 **Standard Occupational Classification** (SOC) system to designate occupational categories workers in order to collect, calculate, or disseminate workforce related data. Occupational definitions are used to classify workers into 840 detailed occupations according to their occupational definition. Detailed occupations are collapsed to form 461 broad occupations consisting of 97 minor groups and 23 major groups. These occupations are grouped by similar job duties or skills, education, and/or training.

Improving Workforce Data Quality

The **Department of Labor** (DOL), in partnership with several Federal agencies, has developed a set of common performance measures for Federally-funded training and employment programs in an effort to improve the management of the workforce system and usability of performance data. The common measures for adult training and employment programs include entered employment, employment retention, and earnings increase.

DOL has also contracted the State of Maryland to pilot the **Federal Employment Data Exchange System** (FEDES), which represents a convenient and secure way for participating states to receive federal civilian employee, postal service and active duty military employment and earnings data for authorized use from the Office of Personnel Management (OPM), Department of Defense (DOD), and the United States Postal Service (USPS). This system is structured to meet states' data needs for federal reporting as well as state level reporting and evaluation, and facilitates the exchange of all available federal employment data.

Additionally, DOL has released over $12 million from funds in the FY 2010 budget for Training and Employment Services for State Workforce Agencies (SWA) to implement the **Workforce Data Quality Initiative** (WDQI). The WDQI is intended to help states accomplish a combination of the following objectives:

1. Develop or improve state workforce longitudinal data systems.
2. Enable workforce data to be matched with education data to create longitudinal data systems with individual-level information from Pre-K through postsecondary and the workforce.
3. Improve the quality and breadth of data in workforce longitudinal data systems.
4. Use longitudinal data to provide information about program operations and to analyze the performance of education and training programs.
5. Provide information to consumers to help them select education and training programs.

As part of the Data Quality Initiative, state workforce agencies will need to collect and employ longitudinal administrative data related to the workforce, including data beyond UI wage records. In order to accommodate state longitudinal data bases, the workforce administrative records will need to include other programmatic data, including data on employment and training and related services. Merging workforce and education data will facilitate the analysis of individuals' receipt of education, employment, and training services to help identify the type of services, which result in optimal workforce program participation and employment outcomes.

Workforce administrative data can be linked because these programs collect participants' Social Security number. Additionally, for students leaving school, workforce administrative data can be used to track the employment of former students, as well as their subsequent earnings and industry. Similarly, these data will show whether former students are unemployed, when they became unemployed, if they collect unemployment insurance benefits, the types of employment services received from state workforce agencies, and whether they receive training or related services.

Confidentiality represents a major issue facing the integration of workforce data in state longitudinal data systems. For example, the disclosure of student records by the educational agencies and institutions that receive funds from the U.S. Department of Education is limited by the Family Educational Rights and Privacy Act (FERPA) of 1974. This federal enactment establishes the legal parameters governing access to and release of student educational records. FERPA gives parents' rights with respect to their children's education records. These rights are transferred to the student when he

or she reaches the age of 18 or attends a school beyond the high school level. These students become "eligible students."

FERPA regulations allow schools to disclose those records, without consent, to the following parties or under the following conditions:

- School officials with legitimate educational interest.
- Other schools to which a student is transferring.
- Specified officials for audit or evaluation purposes.
- Appropriate parties in connection with financial aid to a student.
- Organizations conducting certain studies for or on behalf of the school.
- Accrediting organizations.
- To comply with a judicial order or lawfully issued subpoena.
- Appropriate officials in cases of health and safety emergencies.
- State and local authorities, within a juvenile justice system, pursuant to specific State law.

Additionally, unemployment compensation (UC) program data are regulated by federal laws, which require that States protect the confidentiality of information collected from UC programs. Section 603.9 of the Code of Federal Regulations: **Title 20-Employee Benefits** (20 CFR Part 603) mandates that States and State UC agencies must confirm that recipients of confidential UC information have certain safeguards in place prior to the disclosure of any confidential information. However, an exception to this regulation is that States do need to apply the these security arrangements to Federal agencies that have been identified by the DOL as having adequate security measures in place that align with the requirements of 20 CFR Part 603.

Workforce Programs

Key Federal Workforce Programs include the following:

1. Workforce Investment Act of 1998
2. The Wagner-Peyser Act (105-220)
3. Work Opportunity Tax Credit
4. Unemployment Insurance
5. Trade Adjustment Assistance (TAA)
6. Temporary Assistance for Needy Families (TANF)
7. American Recovery and Reinvestment Act

The **Workforce Investment Act** (WIA) of 1998 put in place the framework for a national workforce preparation and employment system. This legislation aimed to address the gap between the need for skilled workers in businesses and the need for individuals have access to training, education, and employment support. One of the major requirements of WIA is for states to establish “One Stop” service centers, which facilitate easy access to employment and job training information and services. Additionally, the WIA also implemented a state and local Workforce Investment Boards (WIBs), which design and manage local training and employment programs.

WIA includes the following key components:

1. The Adult program provides employment and training assistance to adults (age 18 and older) to increase their employment, earnings, occupational skill attainment, and job retention.
2. The Youth program works to improve the long-term employability of youth ages 14 through 21, enhance their educational, occupational and citizenship skills, encourage school completion, promote future employment and earnings and reduce welfare dependency, and facilitate a successful transition from school to work for youth.
3. The Dislocated Worker programs provide retraining and re-employment services to individuals who have been dislocated from their jobs because of layoff or plant closing.

The Employment Service is a nationwide system of public employment offices created by the **Wagner-Peyser Act of 1933**. This service has now become part of the One- Stop delivery system, as amended by the Workforce Investment Act of 1998. Services funded by Wagner-Peyser include assessment of skill levels, abilities and aptitudes, as well as career guidance and referral for training as appropriate. Additional services may also be funded:

1. A nationwide computerized career information system including an automated job bank, repository for job seekers resumes, career, and workforce information, as well as information on institutions and organizations that provide training.
2. The development and distribution of state and local workforce to facilitate the communication of information pertaining to job opportunities, labor supply, and labor market trends for job seekers, employers, and providers and planners of job training and economic development.

Trade Adjustment Assistance for Workers is a program that provides reemployment services and benefits to workers whose employment has either been terminated or reduced due to increased imports or shifts in production outside the United States. The TAA program is designed to help program participants obtain new jobs, ensure that they are capable of retaining employment and earning wages comparable to their prior employment.

Background on Career and Technical Education

The term **Career and Technical Education** refers to organized educational activities that involve a sequence of courses to provide individuals with the academic and technical knowledge and skills needed to prepare for further education and for careers in current or emerging employment sector. These skills includes competency-based applied learning that supplements the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical, and occupation-specific skills of students who are enrolled in these programs.

The Carl D. Perkins Vocational and Technical Education Act was first authorized by the federal government in 1984 and reauthorized in 1998 with the goal of increasing the quality of technical education within the United States to improve the economy. The new **Carl D. Perkins Career and Technical Education Improvement Act of 2006** provides an estimated $1.3 billion in federal support for career and technical education programs for all 50 States and includes three primary areas of revision and will extend through 2012:

1. Includes the term "career and technical education" instead of “vocational education"

2. Establishes the Tech Prep program as a separate federal funding stream within the legislation
3. Maintaining state administrative funding at 5 percent of a state's allocation

Additionally, the new law requires "programs of study" linking academic and technical content across secondary and postsecondary education, as well as improved local accountability provisions to facilitate continuous program improvement.

The Carl D. Perkins Career and Technical Education Act of 2006 requires states to assess secondary and postsecondary learner outcomes on a set of core indicators, in order to build upon and improve accountability and reporting requirements in prior Perkins legislation.

Office of Vocational and Adult Education (OVAE) administers, coordinates programs that are related to adult education and literacy, career and technical education, and community colleges. However, states use different approaches to defining terminology, identifying CTE participant and developing construct measures to collect accountability data. This variability among States has thus undermined the comparability of Perkins data.

Career and Technical Education includes the following components:

1. Academic subject matter that includes an emphasis on real world relevance
2. Focus on employability skills, such as job-related skills to workplace ethics
3. Emphasis on promoting career pathways that link secondary and postsecondary education
4. "Second-chance" education and training
5. Access to education for additional training and degrees in the areas of workplace training, upgrading skills, and career advancement

The following Federal Programs focus on Career and Technical Education:

1. America's Career Resources Network
2. Pacific Vocational Education Improvement Program
3. Tech-Prep Demonstration Program
4. Tech-Prep Education
5. Tribally Controlled Postsecondary Career and Technical Education Program
6. Vocational Education--Basic Grants to States
7. Vocational Education-Grants to Native Americans and Alaska Natives
8. Vocational Education National Programs
9. Vocational Education--Native Hawaiians

Additionally, the National Career Technical Education Foundation receives grants to develop products and provide research to support **Career Clusters** in Perkins legislation as the supporting arm of the National Association of State Directors of Career Technical Education Consortium (NASDCTEC). NCTEF established "Career Clusters" as part of the States' Career Clusters Initiative (SCCI). The goal of Career Clusters is to connect career technical education (CTE) to education, workforce preparation, and

economic development. There are "programs of study," (also referred to as "career pathways") within each Career Cluster, which outline sequences of academic, career, and technical courses and training that may begin as early as ninth grade and lead to increasingly higher levels of education and better-skilled positions in specific industries or occupational sectors. SCCI provides technical assistance to States that implement Career Clusters, and serve as a clearing house for products and information related to the development and implementation of Career Clusters within states.

4.0 STANDARDS CONTEXT

Defining Standards

A standard is defined as “something considered by an authority or by general consent as a basis of comparison; an approved model.”

There are five kinds of structures in the life cycle of education data:

1. Collection
2. Operational Storage
3. Longitudinal Storage
4. Output Storage
5. Output

For standards to be relevant, they must establish the type of structure being referenced. The same data element may have a different meaning and metadata during different structures. Developing a generic glossary of elements is possible but relies on some transformations as that element moves through its life cycle.

A **data standard** describes the required content and format in which particular types of data are to be represented. A data standard may include a specific taxonomy, names, definitions, descriptions and code sets. Examples include CEDS, the National Center for Education Statistics (NCES) Handbooks, the SIF data model, PESC schemas, the IMS Global Learning Consortium (IMS GLC) enterprise specification, and the National Education Data Model (NEDM).

An **interoperability standard** allows conforming or certified applications from multiple vendors to interoperate, ideally “out of the box." This means that the transport used to convey the data must be specified as well as the format of the data actually being exchanged. Any interoperability standard can therefore be thought of as a combination of a data standard and one or more transport standards. Examples include the SIF infrastructure and PESC service schemas.

A **transport standard** defines the “messaging infrastructure” used to convey messages sent between conforming applications, although it does not address the contents of such messages. The functionality provided to conformant applications by standards in this group can include automatic partner discovery, data security (encryption, authentication and authorization), guaranteed message delivery, content based routing and support for event publish and subscribe (one to many) connections. An example is the Education Data Interchange (EDI).

A **technical standard** describes a class of data objects (entities, characters and character data) and partially describes the behavior of computer programs which process them. They are focused upon message infrastructure or generic data types (ex: country codes) and not vertical industry-specific content. The standards may be normative dependencies from either or both data or interoperability standards. An example is extensible markup language (XML).

Compliance standards are guidance for USED data files/descriptions designed to collect and place state-reported kindergarten through higher education performance data at the center of policy, management and budget decisions. These centralized data repositories are populated by state education agencies (SEAs), higher education agencies (IHE), local education agencies (LEAs) and schools. Examples include EDFacts, Integrated Postsecondary Education Data System (IPEDS), and the Free Application for Federal Student Aid (FAFSA).

Common Education Data Standards (CEDS)

The Common Education Data Standards (CEDS) initiative is a national, collaborative effort to develop voluntary, common data standards for a key subset of K-12 (e.g., demographics, program participation, course information) and K12-to-postsecondary education transition variables.

The purposes of the CEDS are to identify a list of key K-12 and K12-to-postsecondary transition variables (expansion into PreK and the workforce will be considered in the future) and agree upon standard definitions, code sets, business rules, and technical specifications for those variables. The goals of the CEDS are to increase data interoperability, portability, and comparability across states, districts, and higher education organizations.

The CEDS initiative is comprised of the Council of Chief State School Officers (CCSSO), the State Higher Education Executive Officers (SHEEO), the United State Department of Education (USED), the Bill and Melinda Gates Foundation (BMGF), the Data Quality Campaign (DQC), the Michael and Susan Dell Foundation (MSDF), the Postsecondary Electronic Standards Council (PESC), and the Schools Interoperability Framework (SIF).

Learning from a year of lessons, the second year of the project is focusing on the adoption and implementation of K12 data elements and structures that will expand to include postsecondary data elements.

Origins of CEDS

The initiative builds on a foundation of previous efforts to develop education data standards, data sets, and definitions. In the mid-1970's, the NCES Data Handbooks began to catalog and list glossary definitions of elementary and secondary data elements. The Handbooks provide guidance on consistency in data definitions and maintenance for education data, for accurate aggregation and analysis. Over the years, the Handbooks have gained traction but remain voluntary.

In 1989, transcript standards began with the EDI College to College transcript specification, which was expanded to serve both PK12 and higher education needs. The EDI standard is no longer in common use; it is the basis of a variety of XML specifications. The SPEEDE/EXPRESS transcript specification is still being used today.

In 1997, SIF and PESC were founded with a focus on interoperability, relying heavily on existing data standards or federal compliance standards. SIF focused primarily on a K12 infrastructure for moving data, while PESC focused on postsecondary data transport. Also in 1997, the IMS GLC was also founded with a focus on postsecondary technical specifications. SIF, PESC, and IMS GLC maintain support of administrative data standards and specifications, as well as moving into the instructional and curriculum space.

In 2005, NCES assembled subject-matter experts from the PK12 sector and generated a white paper on the creation of NEDM, a detailed, conceptual representation of the education information domain. NEDM aims to provide a shared understanding of local information needed to enable effective instruction of students and superior leadership of schools. The white paper published a set of recommendations and indicated that much groundwork was required before a widely accepted national data model could be developed.

Based on these recommendations, an NCES National Forum on Education Statistics Task Force created (1) a P12 conceptual data model with core entities and attributes, and (2) a list of questions and business cases that such a model would need to answer. The USED Office of Education Technology, CCSSO, SIF and NCES created the NEDM website, built out the conceptual model, started to address the Forum's questions and business cases, and provided access to a model that could be used to inform people of what is out there and how it is related. The CEDS will provide an integrated view of these education standards to support building data systems and using education data for data-driven decision-making as well as compliance.

Origin of State Core Model

The initial version of the State Core Model was developed by Public Consulting Group on behalf of CCSSO. It was published as part of Version 2.0 of the National Education Data Model (NEDM) in March 2010 and dealt with a more limited scope.

This current version expands the State Core Model in several important ways:

- including early childhood, post-secondary, and workforce
- mapping to additional federal collections other than EDFacts
- factoring the model into a more normalized structure

The State Core Model consists of three principle artifacts: (1) this document; (2) the “State Core Workbook,” an Excel 2007 file containing the data dictionary and maps; and (3) a physical data model with scripts to support implementation of the model in major technical platforms.

Relationship Between CEDS and State Core Model

The CCSSO State Core Model was initially developed under the National Education Data Model (NEDM) project and then vastly increased and expanded as part of the Common Education Data Standards initiative. The reporting data store (RDS) in the CCSSO State Core Model has been mapped to the CEDS to identify whether collecting the State Core will allow a state to report the CEDS. Gaps are identified and will be fed back to the Technical Working Group of the CEDS Initiative.

5.0 DATA SECURITY AND PRIVACY

While not specific to this model, there are important security, privacy, and confidentiality considerations which must be well understood and carefully managed. Three bodies affect the definition of data security and privacy:

- **Federal**: Including but not limited to FERPA and HIPPA
- **State**: including individual state laws governing privacy, education, and disclosure
- **Sector specific**: Each sector with sub entities (agencies, boards, executive, school administration, etc.) may implement their own administrative rules for the school or system, which comply with or enhance state and federal laws.

Security and Access Management

The State Core Model is a reference model that can be used to create, update and maintain the physical data models to achieve the objectives of longitudinal data collection. With that, comes the responsibility to safeguard the data sets and information across a network of touch points that supports the SLDS platform. The management and technical responsibilities should include:

- **Establish a Security Task Force (STF)** with representatives from each participating stakeholder to manage and oversee all activities and responsibilities. There should be a special path of communications and alerts shared with the members of the STF. There should be a chair, secretary and public information officer appointed to manage communications. This group should oversee data management practices spread across schools, districts and institutions that feed the SLDS which includes establishing proper training, certification, annual audit and review of the tasks performed and required to support the SLDS. Breaches of information, loss of media and unexplained access of the SLDS should be reported to the Security Task Force public information officer.

- **Clearly Identify Secure Data.** The vast majority of data in a SLDS does not have privacy restrictions and must be made available upon request under the Freedom of Information Act (FoIA) and related state laws. The exceptions described above in FERPA and HIPPA are limited to individually identifiable data. In the People subject detail in Section 6, the specific tables that enable data to be linked to individuals is identified. Privacy policies should be explicit regarding the protection of this data.

- **Encrypt Data.** Determine the level of encryption for the SLDS and the impact on application design and implementation. Minimally, select to encrypt the full disk volume or disk to safeguard the entire system. All temporary media used to transmit data to or from the SDLS should be encrypted such as removable media, storage media or portable media. All data transported over the Internet should be encrypted. Implement Transport Layer Security (TLS) with Secure Socket Layer (SSL)

- **Restrict Access.** Establish connections to the SLDS through a controlled application that will limit the access to the physical attributes of the system. Never store the password in the application directly. Establish a web service layer with encryption and keys to secure access to the SLDS data store. This will eliminate direct access to the data store for consumers of the SLDS. All interfaces that utilize personal identifying elements should be isolated and managed at the server level to avoid sending the data to client workstations outside the purview of the host data center that is protected under lock and key. If personal identifying elements are used in applications to cross walk data stores, they should never be passed back to a user interface or report accessed on an unsecure workstation because they would be un-encrypted. Browser cache and application cache of data derived from queries of SLDS should be deleted when sessions end or the browser closes automatically. Tools and applications with access to the SLDS platform to support analytics, reports and queries should be limited to logical data views, not the physical data schemas. These views will be unpacked and not offer any personal identifying elements. If Windows Terminal Services are employed on data center servers, the SLDS application should not be run outside the host data center on non-secured pc's, laptops or workstations.

- **Audit Access.** Require individuals who access the SLDS data to log their uses of the queries and acknowledgement of the confidentiality responsibilities they have. Secure backups; track the media, to ensure limited physical access and to destroy outputs when no longer needed. Any server, laptop or desktop attached to the database server should have Encrypting File System (EFS) enabled. Secure all physical and logical connections to the datasets and data collection processes. Utilize Windows Security or Active Directory to access server that would manage audit trails, file use, etc. Hire an independent technology firm to audit security procedures across stakeholders that intersect with the SLDS including the schools, districts, institutions and agencies - to ensure the policies are followed and risks mitigated.

- **Train all Staff with SLDS Access.** New employees including consultants and researchers should not be given access to the SLDS platform or be involved in any data extraction or collection process without going thru formal training and certification that they understand the implemented practices governing the SLDS platform. All laptops and desktops given access to the SLDS platform should be inventoried and kept current monthly.

The risk of unauthorized data exposure outside the realm and control of departments and users authorized to manage the SLDS project needs to be taken very seriously, given the cost of recovery from possible safety failures, accidental loss and breaches.

Encryption Alternatives. There are three forms data and file encryption that can be employed to safeguard the physical SLDS platform:

1. **File or Volume Encryption.** Depending on which version of the operating system is installed and utilized on the SLDS platform, there are granularities of file protection to be considered. In most

releases of Windows 2000 and later (including Windows Vista® and Windows 7®), the Encrypting File System (EFS) is available. EFS encrypts data at the physical file level. BitLocker is a technology that encrypts data at the volume level – which is how the disk is partitioned. It is available in Windows Vista Enterprise Edition, Windows Vista Ultimate Edition, and all editions of Windows Server® 2008. Encrypting File System (EFS) is a file encryption feature. Like encryption in SQL Server or Oracle, EFS relies on the Windows Cryptographic API (CAPI). Both files and folders can be marked as encrypted, although the encryption actually occurs only at the file level. Each file is encrypted by an individual File Encryption Key (FEK) much as each database is encrypted with an individual DEK in TDE. The FEK is protected by the user's certificate, similar to how the DEK is protected by a certificate. The EFS certificate is assigned to a user while the TDE certificate is conceptually a server-wide object. Multiple certificates can be used to encrypt the FEK, which allows for more than one user to access a file. When using EFS with SQL Server and Oracle, the database server service account must have access to the file encryption keys encrypting any database file so that it can read the physical file. This cannot be used as a form of access control—the service account is used to read database files regardless of the login account.

2. **Encrypting part of the Database.** Database servers offer encryption at the cell level which allows a selection of what is encrypted. Cell-level encryption is implemented as a series of built-ins and a key management hierarchy. Using this encryption is a manual process that requires focus on the architecture of the application to call the encryption and decryption functions. In addition, the schema must be modified to store the data as varbinary and then re-cast back to the appropriate data type when accessed through queries including views. The traditional limitations of encryption are inherent in this method as none of the automatic query optimization techniques can be used. Cell-level encryption has a number of advantages over database-level encryption. It offers a more granular level of encryption. In addition, data is not decrypted until it is used (when a decryption built-in is called) so that even if a page is loaded into memory, sensitive data is not in clear text. Cell-level encryption also allows for explicit key management. Keys can be assigned to users and protected by passwords to prevent automatic decryption. This offers another degree of control; however, the administrator is further burdened with maintaining the keys. Because cell-level encryption is highly configurable, it may be a good fit for applications that have targeted security requirements such as locking down student related elements. The primary disadvantages of cell-level encryption are at the application level, the performance penalties, and the administration cost. Performance for a very basic query with cell-level (that selects and decrypts a single encrypted column) tends to be around 20%. This inversely scales with workload size resulting in performance degradations that are several magnitudes worse when attempting to encrypt an entire database.

3. **Transparent Data Encryption (TDE)** is an encryption feature supported by popular database management systems such as Microsoft® SQL Server and Oracle. It is designed to provide protection for the entire database at rest without affecting existing applications. Implementing

encryption in a database traditionally involves complicated application changes such as modifying table schemas, removing functionality, and significant performance degradations. TDE operates at the I/O level through the buffer pool. Thus, any data that is written into the database file and stored on disk is encrypted. Snapshots and backups are also designed to take advantage of the encryption provided by TDE so these are encrypted on disk as well. Data that is in use through applications and user interfaces, however, is not encrypted because TDE does not provide protection at the application, memory or transit level. The transaction log is also protected, but additional caveats apply. The performance impact of TDE is minor. Because the encryption occurs at the database level, the database can leverage indexes and keys for query optimization. This allows for full range and equality scans. In tests using sample data and TPC-C runs, the overall performance impact was estimated to be around 3-5% and can be much lower if most of the data accessed is stored in memory.

The options are not mutually exclusive. The different levels of encryption available across file and database systems and the operating system such as Windows can be leveraged to provide defense in depth and greater overall security. Transparent data encryption provides a good blend of ease of administration, ease of use, performance, and security. TDE also provides a comprehensive defense because the encryption stays with the database even when it is moved to different locations. Both backups and snapshots are protected without requiring support from the server administrator. .

Database Backups. When TDE is enabled on a database, all backups are encrypted. Thus, special care must be taken to ensure that the certificate that was used to protect the DEK is backed up and maintained with the database backup. If this certificate (or certificates) is lost, the data will be unreadable. So, tracking of the certificates is very important. Back up the certificate along with the database. Each certificate backup should have two files; both of these files should be archived (ideally separately from the database backup file for security). Alternatively, consider using the extensible key management (EKM) feature if available for storage and maintenance of keys used for TDE. Backups should be physically secured and retained with the hosting site with physical logs tracking access and use of the Backups.

Transport Layer Security. Transport Layer Security (TLS) is based on Secure Socket Layer (SSL). The Secure Sockets Layer (SSL) is a commonly-used protocol for managing the security of a message transmission on the Internet. SSL uses a program layer located between the Internet's Hypertext Transfer Protocol (HTTP) and Transport Control Protocol (TCP) layers. SSL is included as part of browsers and most Web server products. The "sockets" part of the term refers to the sockets method of passing data back and forth between a client and a server program in a network or between program layers in the same computer. SSL uses the public-and-private key encryption system from RSA, which also includes the use of a digital certificate.

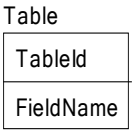
6.0 THE MODEL

The nomenclature used throughout this document will be that of the physical model. This is to facilitate the comprehension of the contents since more people are familiar with physical terms (table, fields) as opposed to the logical terms (entity, attributes). Entity Relationship Diagrams (ERD) provide a visual representation of how the tables, or ideas, within a data model pertain to each other.

Naming Conventions. Consistent naming is important to modeling in that it allows information to be more easily digested. The State Core Model utilizes best practices naming conventions:

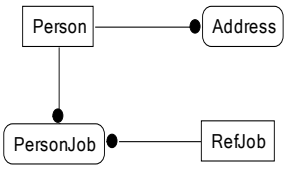
- Table names and field names are descriptive and written in camel-case (first letter of each word/acronym is capitalized).
- The name of a parent table may be used as the first part of a child table. For example, a person's (table Person) demographic information (table PersonDemographic) contains races (table DemographicRace). We can see how the migration of the name helps us identify the relationship of the data.
- The singular form is used for table and field names, unless the lowest level of an element is plural (e.g., 'OtherAcademicSubjects' is one idea, not many in that we do not know all of the subjects, we just care whether or not they exist).
- All reference data tables are prefixed with 'Ref' to indicate the nature of the data.
- Surrogate keys are the table name plus 'Id.' A table named 'Person' will have a surrogate key named 'PersonId.'

Tables. Tables are represented as a rectangle. The rectangle is divided in two by a horizontal line. Everything above the horizontal line is the table's 'primary key'.



The function of the primary key is to uniquely identify one record from all other records within the same table. The State Core model has utilized a design standard of 'surrogate keys.' Surrogate keys do not replace primary keys, but they simplify using them. Essentially, the Dewey Decimal System is a surrogate key mechanism. One number is referenced instead of the title and author of the book. A table with rounded corners means that it is a child of an identifying relationship.

Relationships. The heart of the ERD is illustrating how data relates to itself. By effectively using lines and boxes, we can gather understanding from a simple diagram:

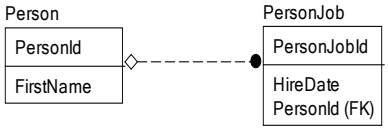


This tells us that a Person has an Address and a Job. We also know that the job has to have a valid piece of metadata (a record in RefJob) in order to be associated with a Person.

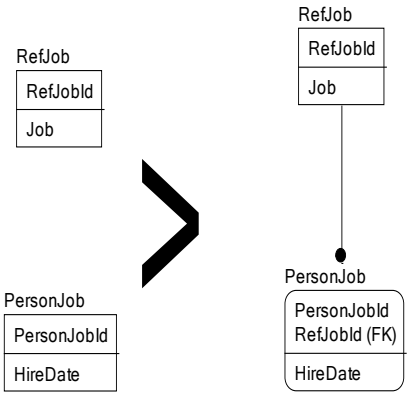
The majority of relationships within a data model are either 'identifying' or 'non-identifying.' Whether a relationship is identifying or not has to do with whether the parent table's primary becomes a part of the child table's primary key. To illustrate this point, consider the four tables above. What uniquely identifies a person's job record? Does the Person alone uniquely identify a PersonJob? No, since a person can have multiple jobs. Does the Job uniquely identify a person's job? No, since any number of people can have the same job. Consequently, to uniquely identify a Person's Job, we need to know the person and the job.

Since the State Core Data Model uses surrogate keys, the presence of identifying relationships is predominately reduced to sub-type/super-type relationships (0).

Non-Identifying Relationship A non-identifying relationship is represented by a dashed line between two tables. The diamond indicates the parent table and a solid dot denotes the child table.

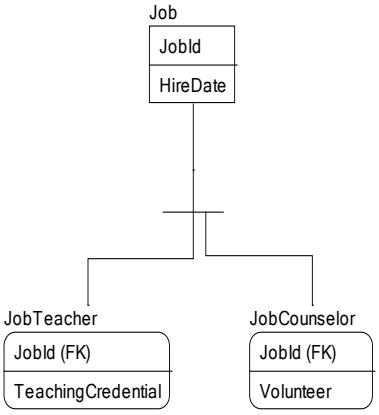


Identifying Relationship An identifying join means that the parent's primary key is added to the child's primary key.



An identifying relationship is represented by a solid line between two tables. The solid dot indicates the child table.

Sub-Type/Super-Type Sub-type/super-type relationships indicate that a record of super-type may have a corresponding sub-type record, but a sub-type record cannot exist without the parent super-type. The power of super-type/sub-typing is that it allows one object to have a different set of properties. By extension, this mechanism allows for multiple tables to be referenced by one common object.



The horizontal line through the solid relationship line(s) indicates a sub-type/super-type relationship.

The following six subject areas are necessary to fulfill the functional objectives of a SLDS:

1. Data Sets - Time
2. Organizations
3. People
4. People-Organization Relationships
5. Standards & Assessments
6. Special Events

Below, the six subjects needed for the core data warehouse are defined and described:

Data Sets - Time

The first subject that must be documented to establish a common understanding between agency staff and data warehouse engineers is somewhat abstract. The concept of "Data Set" can be understood as similar to what a header record is to a file or a card catalog is to a book. The Data Set subject must

define each repository and functional component sufficiently to describe the context, type, and version of the repository.

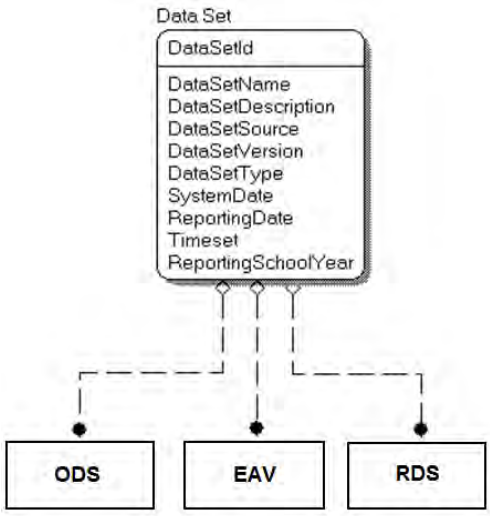
Critically, the Data Set must distinguish between two types of date and time:

- **System Date** - When did the data warehouse access and acquire the data.
- **As of Date** - When is the data about?

This distinction is critical to managing most official reports. While the data in the system may change every day, there are certain snapshot periods or critical annual dates such as September 30 and December 1 that are used for state and federal reports. Because the data originates in district systems and there is inherent latency as it gets uploaded, validated, and corrected in the state system, the data can never be pulled on the specific date of interest. Therefore, a second date needs to be recorded documenting the date that the data is pulled.

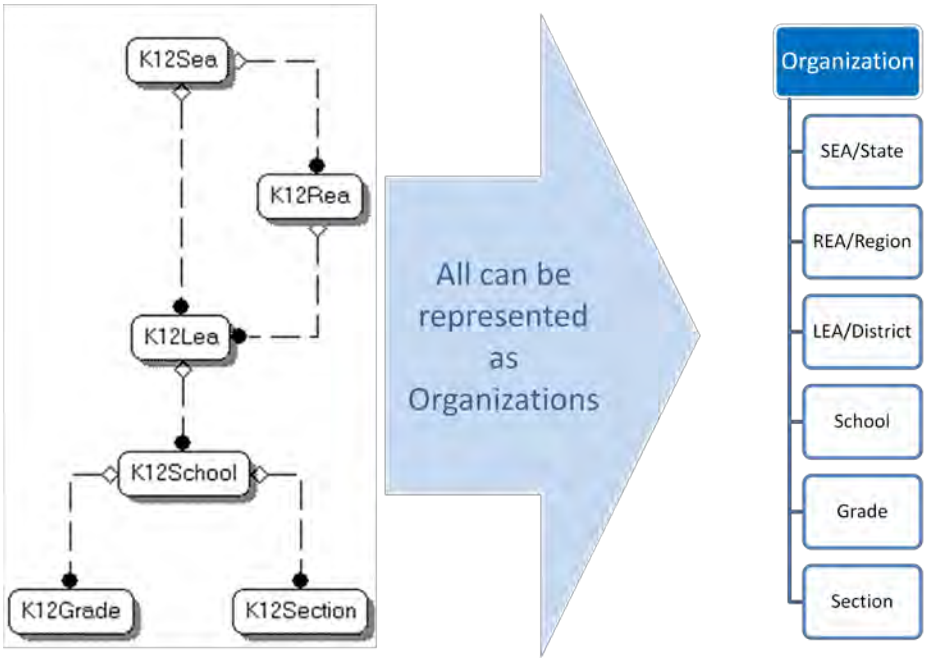
Subject Detail: Data Set

This model does not represent source structures; it is an Operational Longitudinal Data Structure normalized and optimized for storage, not entry or reporting. There exists a global table called "Data Set". All (100.00%) data represented in the model will have relationship to a specific Data Set.

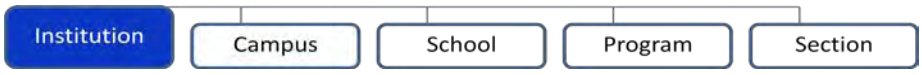


Organizations

After time, the next most central component of an education data warehouse is the directory. Organizations are entities that are not people. The most common type of organizations are public schools and local education agencies (school districts), however, there are many other types and sub-types.



In the context of postsecondary education, an organization may be broken into a variety of sub-entities.

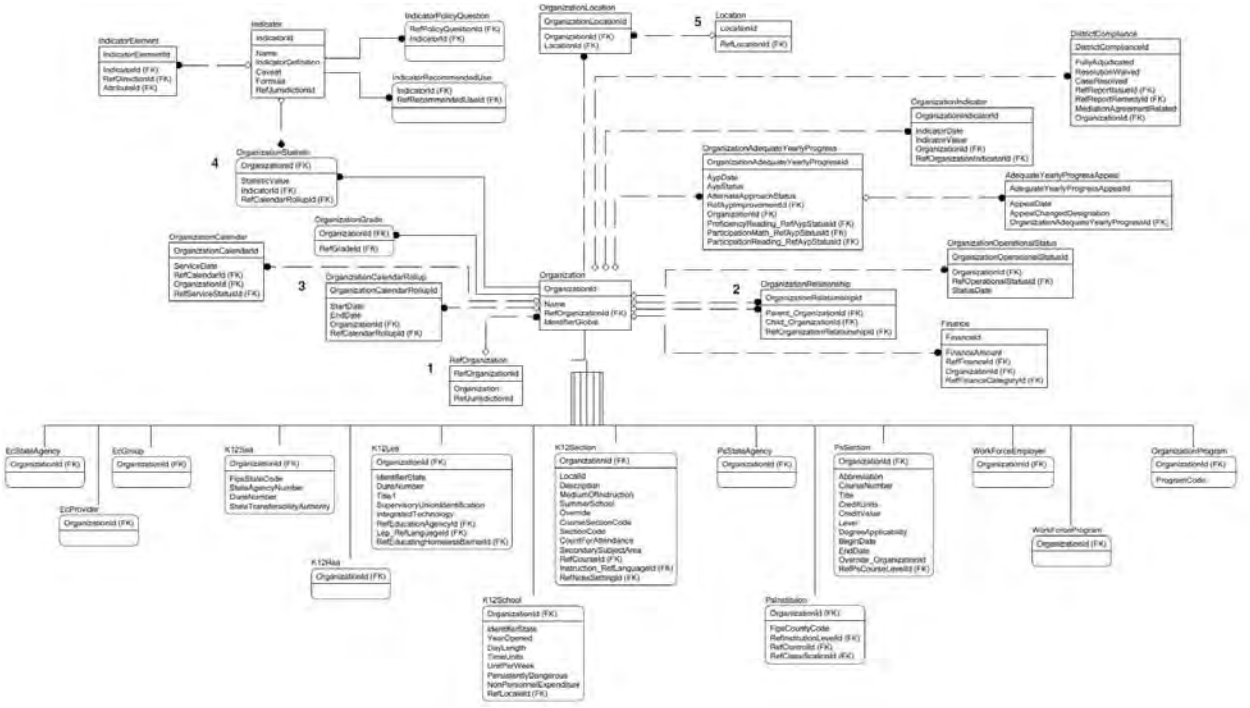


Organizations have relationships to each other. The most common type of relationship is "parent" to "child," indicating that one organization contains or controls other organizations, forming a hierarchy. For instance, An LEA organization parents numerous school organizations which in turn parent numerous section organizations.

Indicators tend to be associated with organizations for a period of time (such as a school year). Organization indicators can cover a wide range of topics such as:

- Key Performance Indicators
  - Median Student Growth Percentile
  - NGA Graduation Rate
  - Chronic Absence Rate
  - Entered Employment Rate
  - Employment Retention Rate
  - Employee Earnings
- Financial Indicators
  - Total Revenues by Category
  - Total Expenditures by Category

Subject Detail: Organizations



1) Organizations share few attributes in common. However, the normalized table is used for IDs and to hold relationships. The sub-type structure is used to hold the attributes specific to the primary organization types:

1. EC State Agency
2. EC Program
3. EC Group
4. K12 SEA
5. K12 REA
6. K12 LEA
7. K12 School
8. K12 Program
9. K12 Section
10. PS State Agency
11. PS Institution
12. PS Program
13. PS Section
14. WF Employer
15. WF Program

(2) A complex set of relationships between organizations is needed to accommodate multiple hierarchies within a single jurisdiction. The OrganizationRelationship table holds multiple roll-up hierarchies to accommodate states that vary the relationship between school, district, workforce programs, workforce employers, and region for AYP/accountability, financial systems, special education cooperative services, career technical education, and other subjects.

(3) Organizations often have academic years which are different from the calendar. The OrganizationCalendarRollup table is used to associate calendar days with such as terms, semesters, trimesters, quarters, and school years associated with a particular jurisdiction.

(4) Organizations often get specific aggregate statistics calculated annually or more frequently. These statistics are considered to be Indicators by the Model and are stored in the OrganizationStatistic table.

(5) Organizations and People can share locations. Location is described more fully in its own subject.

Additional Logic:

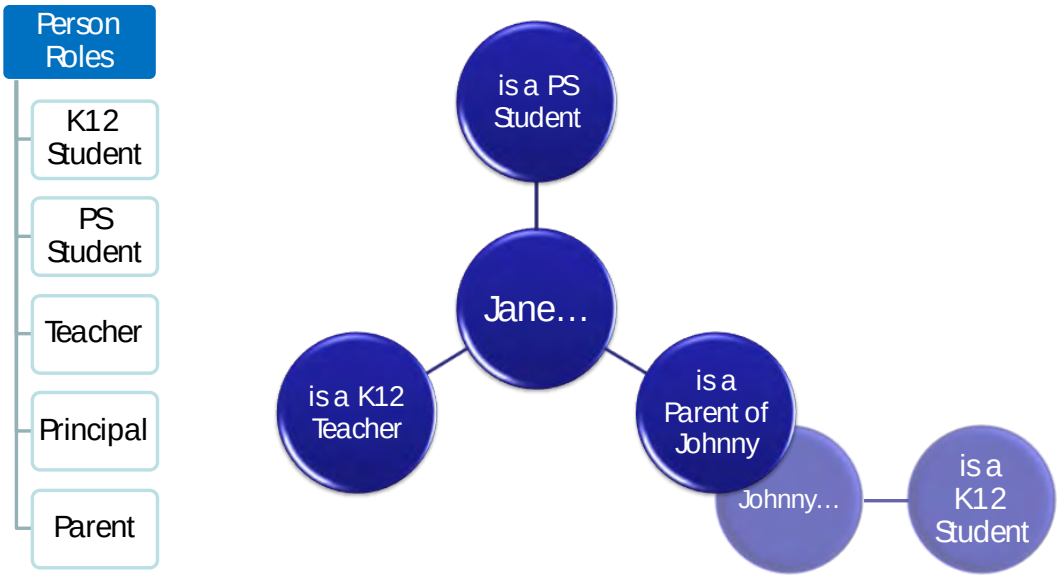
1. An EC Program may or may not be part of a SEA
2. An EC Program may or may not be part of a LEA
3. An EC Program may or may not have multiple locations or sub-types, called EC Groups.
4. Every K12 school is part of an LEA.
5. Every K12 section is part of an LEA and is usually part of a school.
6. A PS institution may be comprised of zero, one or many campuses and schools.
7. Every PS institution includes at least one program of study.
8. Every PS section is part of a PS institution and is usually part of a program.
9. A workforce employer can include a covered establishment or a Federal agency.
10. Most workforce programs collect monthly, quarterly and annual information from Workforce Employers.

People

A key requirement of the State Core Model is that people must remain consistent, despite varying roles and relationships with organizations. At any one point in time, Jane could be:

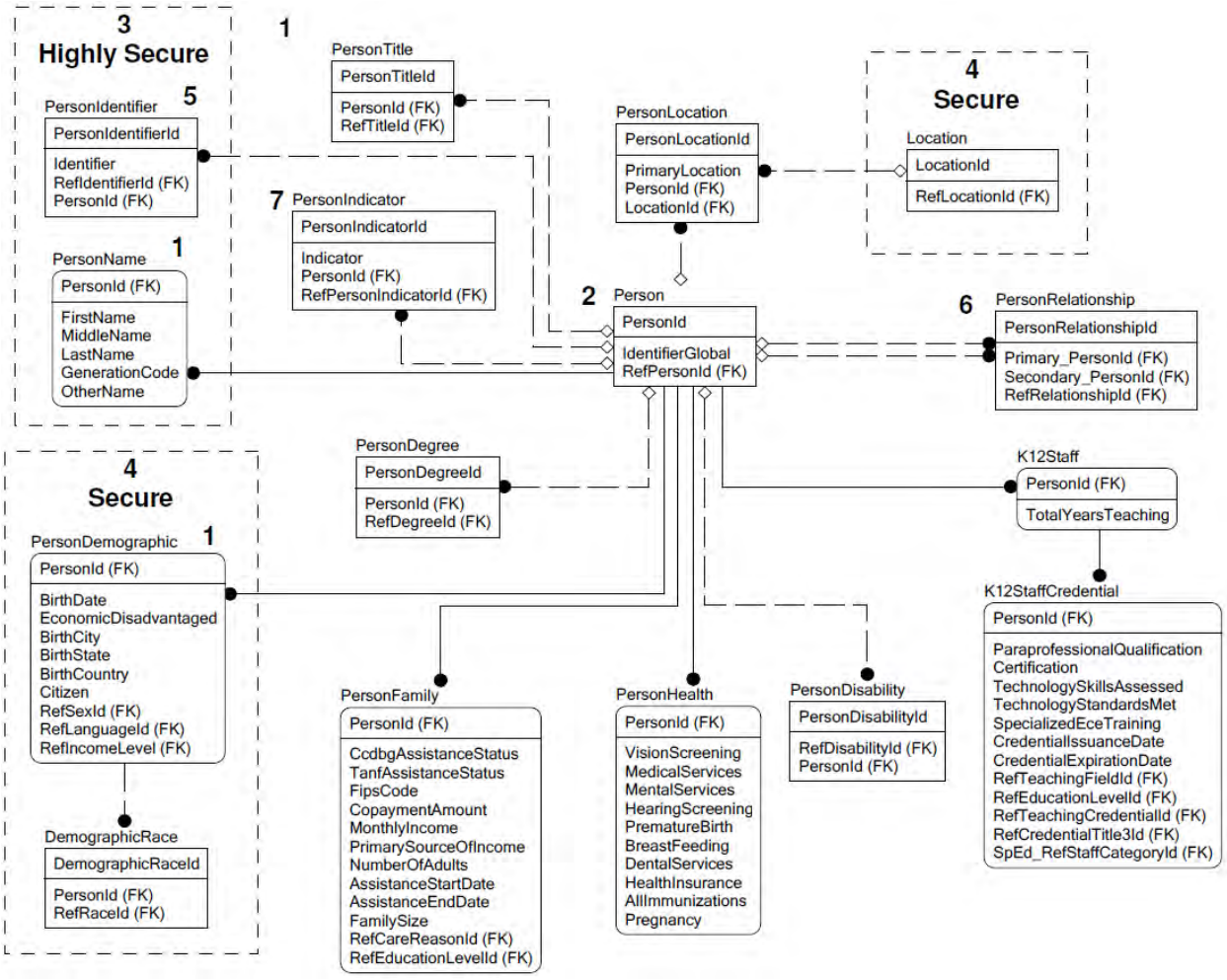
- A teacher in a k12 school
- A parent of a student named Johnny
- A student herself in a post secondary institution.

Over time, these complex relationships become common. The State Core Model must contain an integrated, current view of each person, drawn over time from early childhood, K-12, post-secondary, and workforce sources.



Subject Detail: People

For the most part, People attributes are associated with a particular Person-Organization Relationship. People tend not to have roles or types outside of their relationship to an organization. A person is not a student unless and until they are enrolled in a school.



(1) **PersonName** and **PersonDemographic** tables are shared across all types of people and can be more strictly controlled to restrict record and aggregate access in compliance with FERPA.

(2) The **PersonID** in the Person table is a synthetic key (generated by the system).

(3) **PersonIdntifier** and **PersonName** should be considered highly secure and should not be made available to any individual without clear authorization under FERPA and/or HIPPA. **Highly secure** tables can directly identify records associated with specific people. This information must be used for identity resolution and access by educators with legitimate educational interests.

(4) **PersonDemographic** and Location almost must be kept **secure** at the record level as they can be used to identify individuals, however, they often play an important role in research and reporting, particularly in aggregate. Low N masking should be used when reporting this data to ensure that privacy is preserved.

(5) The **PersonIdentifier** table holds all types of Person IDs including the following types stored as a reference list in **RefPersonIdentifier** field:

1. Social Security Number[12]
2. EC Local ID
3. EC State Assigned ID
4. K12 Local ID
5. K12 State Assigned ID
6. PS Institution ID
7. PS State Assigned ID

(6) The **PersonRelationship** table is used to store relationships between people that are not dependent on an organization (i.e. student-teacher):

1. Parent
2. Guardian
3. Child
4. Ward
5. Sibling
6. Tutor
7. Relative
8. Care Giver

(7) The **PersonIndicator** table can hold any information about a person that may or may not be derivable from other sources in the model. For example, HS GPA. A well organized taxonomy of **PersonIndicator** types can be used to create a person profile and transcript. States are encouraged to work together to compare such structures. The next version of this model will attempt to provide a common reference list.

People-Organization Relationships

The fourth core component of the State Core will contain a greater volume of data then all the others combined. It will hold a standard representation of each change in relationship between a Person and an Organization. Examples of these relationships include every time a student enrolls in a school or changes grades over the summer, or every time a teacher changes assignments within a district.

In addition to storing the relationship between people and traditional organizations, it must also hold the relationship between other groups of people used for counting at particular dates for state and Federal reporting. These "programs include:

- Special Education

[12] It should be understood that Social Security Number must be optional for the model and should be used only for sanctioned workforce activities. In some cases workforce IDs are used for non-citizens as a replacement for SSN.

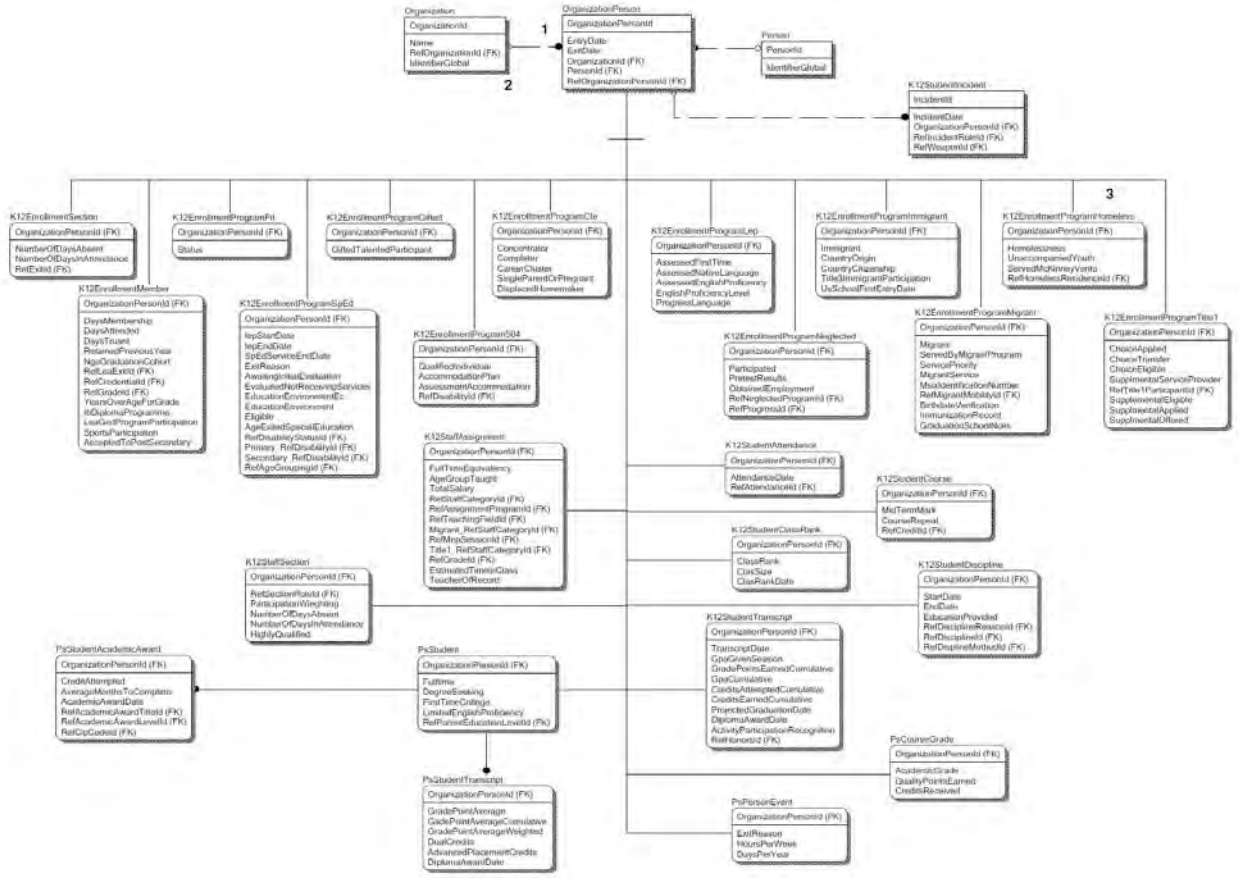
- Free and Reduced Lunch
- Tile I – Students in Poverty
- Title III – English Language Learners
- Perkins - Career Technical Education
- McKinney –Vento -Homeless
- Migrant
- Neglected and Delinquent
- Gifted and Talented
- 504

This Person-Organization Relationship must be the central component to the more normalized, "operational" portion of the data warehouse.

Most importantly, each change in relationship between a person and organization must record a single start date and, if applicable, end date. This subject establishes a common time dimension and is essential for creating proper snapshots of data at particular "as of" dates to fulfill state and Federal reporting.

Subject Detail: Person-Organization Relationship

The third primary subject is the central core of the Model, the relationship between People and Organizations.



(1) In common between all Person-Organization Relationships is the mandatory **EntryDate** field. This field, and where applicable, an **ExitDate** make a standard conforming time dimension to facilitate RDS snapshots as of specific reporting dates. By normalizing this key attribute, the process of producing RDS snapshots is greatly facilitated.

(2) K12 schools and districts can have three distinct and overlapping types of enrollments: A student can be enrolled in a school/district as a member, resident, or service client. The member school/district is accountable for the student for AYP. The resident school/district has jurisdiction for where the student lives. Service school/district is where the student attends and receives services. Most states do not allow students to be a member of more than one school or district on any one day, although some states allow enrollment split by FTE.

(3) K12 students are recognized as participating in certain federal, state, and local 'reporting programs' for vertical reporting and counting. Reporting programs include: Special Education, LEP, Migrant, Homeless, Neglected and Delinquent, Medicaid, Title I, CTE, Immigrant, and 504.

(4) Workforce employers report on workforce employees' social security number, wages and the workforce employer's industry. A workforce employee's social security number, employment status,

and earnings can be used to track common workforce performance measures within and across federally funded workforce employment and training programs.

(5) Workforce employees who are employed or formerly employed can participate in workforce employment and training services provided by federally funded workforce programs.

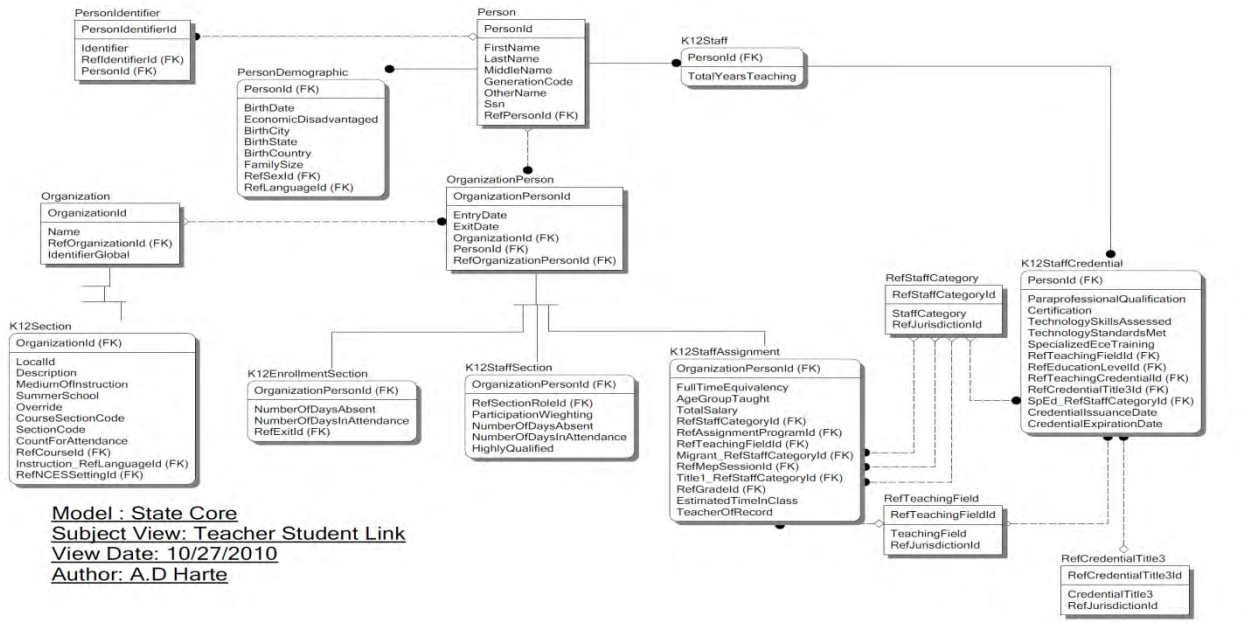
Additional Logic Rules:

1. EC Child or pregnant EC Parent can be enrolled in one or more EC Program.
2. K12 Student can be member enrolled in a grade in a school in a district
3. K12 Student can be resident enrolled in a district, and sometimes a school in the district.
4. K12 Student can be serviced by a school in a district
5. K12 Student can be enrolled into one or more section in a school in a district.
6. K12 Staff can be assigned to one or more section in a school in a district or just to a school or district, but start out un-assigned.
7. PS Student can be enrolled in one or more PS institutions.
8. PS Student can be member enrolled in one or more programs within a PS institution.
9. PS Student can be enrolled in one or more sections in a PS institution.
10. Workforce employees are either currently or formerly employed by a workforce employer.
11. A workforce employee can also be a student.
12. Workforce employees who are no longer employed can apply for and collect unemployment insurance benefits.

Subject Detail: Student-Teacher Link

One particular type of Person-Organization Relationship of special note is the Student-Teacher Link. While this subject shares the general structure of the **OrganizationPerson** table with **EntryDate** and possible **ExitDate**, it requires a specialized set of elements needed to establish one or more **TeacherOfRecord**. The structure must also be able to capture the roles and details of the relationships between a student and each contributing educator within the context of a course-section.

The most common representation of the Student-Teacher Link will be one in which the Organization is a Section of a Course scheduled within a school, with at least one teacher and a roster of students. The State Core Model provides the structure for maintaining this relationship and leaves flexibility to education agencies, based on local policy, as to the allowable roles and participation weighting of the contributing educator relationship.



Standards & Assessments

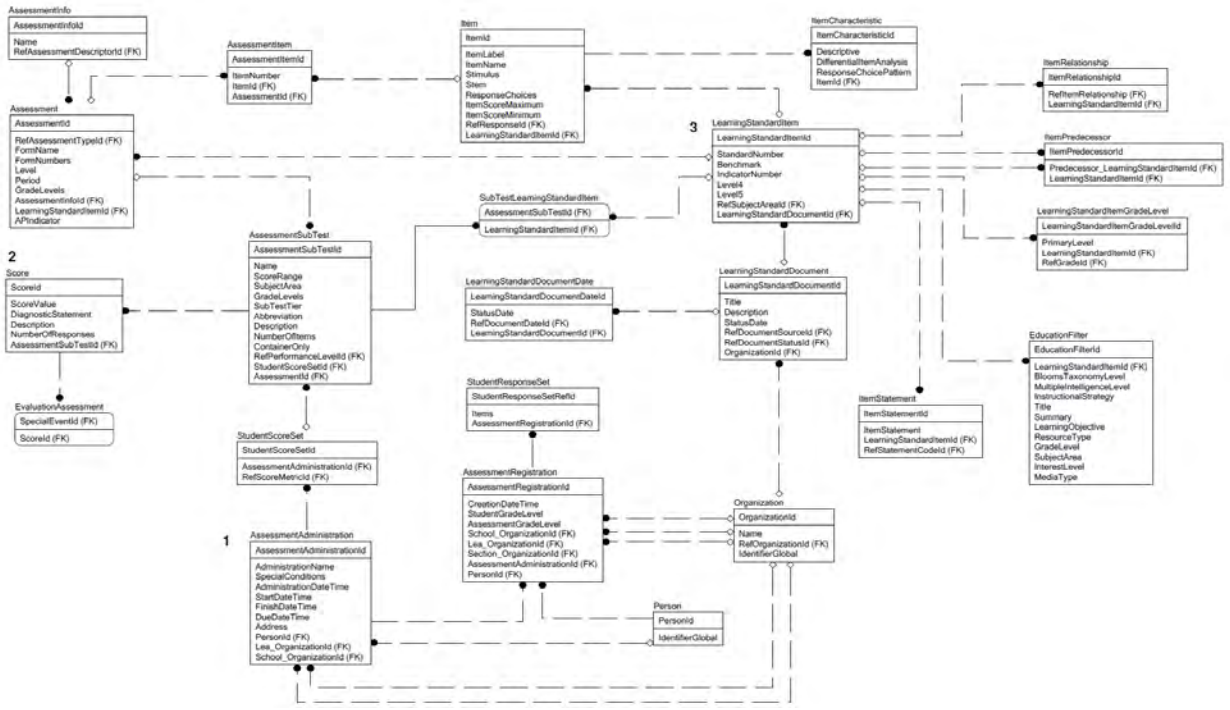
The last two subjects are not central to the model, but are sufficiently important to warrant their own subjects. The first is Standards and Assessments. These entities have relationships to both People and Organizations.

They include:

- Assessments
- Assessment Result Sets (Student Scores)
- Learning Standards.

Subject Detail: Standards & Assessments

The Assessment, Learning Standards, Content subject are based heavily on the SIF 2.4 specification.



Much of the data structure exceeds that which is typically maintained by an SEA as data.

1. Tables such as AssessmentAdministration would like need to be entered by a person, however, they would only need to be entered once for a statewide assessment administration.
2. The primary field to hold student's scores is the ScoreValue in the Score table.
3. Learning Standard Items are stored in a hierarchy within a Learning Standard Document.

Special Events

The final subject area contains a set of topics with a common relationship to time. In general events happen to individuals on a particular day and include:

Special Education

1. Referral
2. Evaluation
3. Determination
4. Placement
5. Services
6. Annual Review
7. 3-Year Review

Discipline Incidents

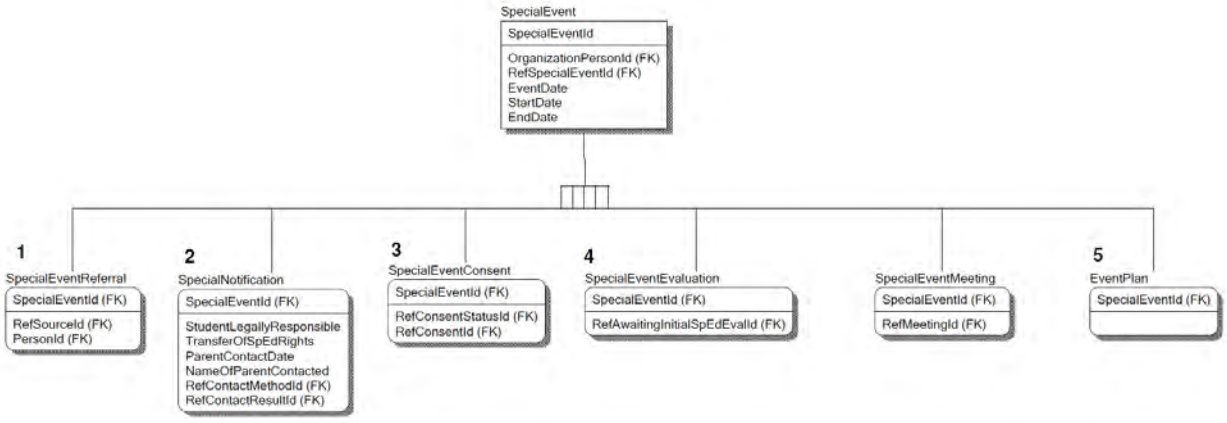
1. Suspensions
2. Expulsions
3. Weapons

Attendance

1. Daily
2. Period

Subject Detail: Special Events

The Special Events subject deals with the sequence of events associated with special education, response to intervention (RTI), dropout early warning intervention systems (DEWIS), and positive behavior intervention systems (PBIS).

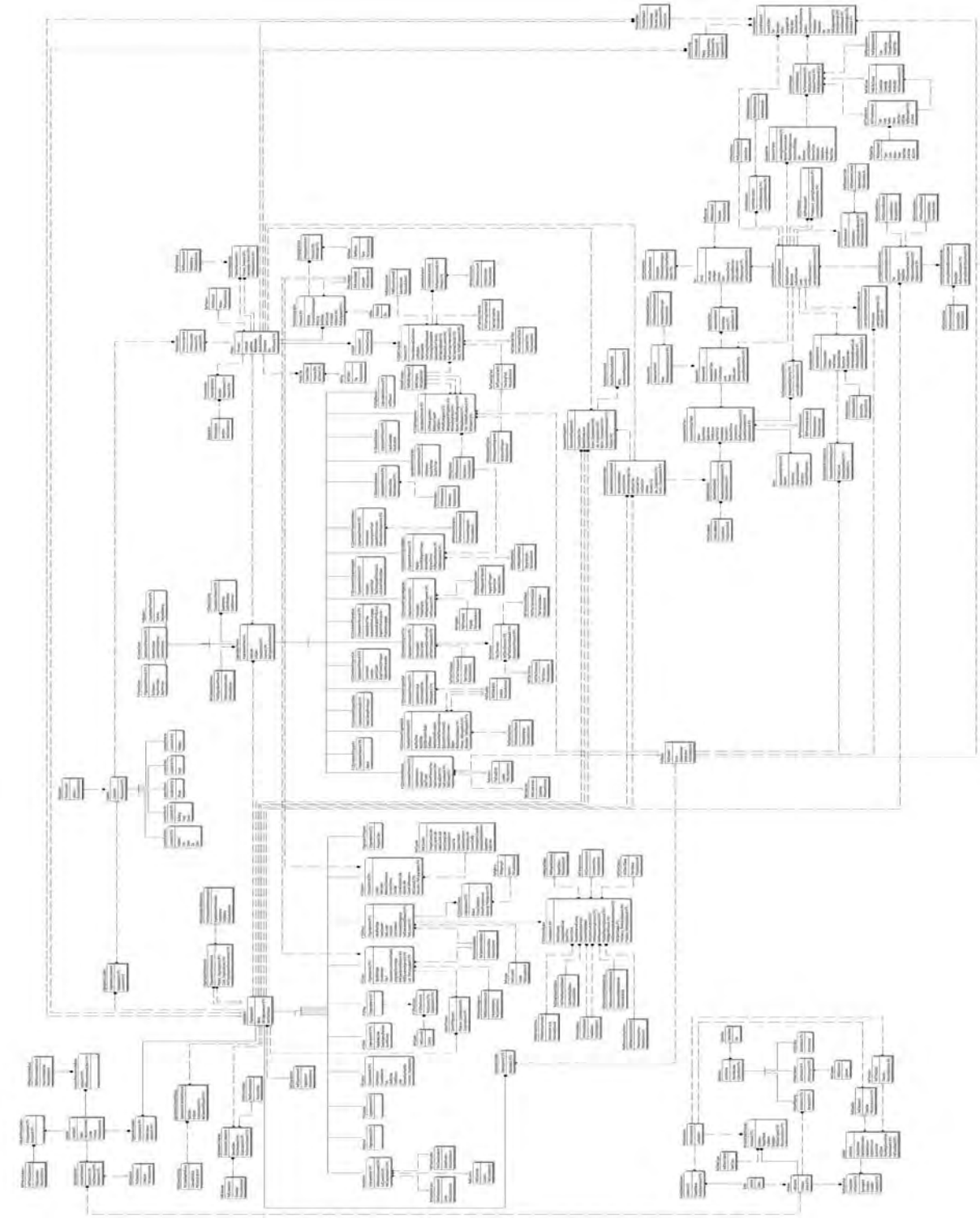


1. In all the process starts with a Referral event. Either a Person or an Organization can Refer a student as a result of a Child Find or screening process.
2. If the referral is to special education, the student's parents must be notified and (3) consent received to evaluate the student.
3. The Evaluation results are used as part of a SpecialEventMeeting to determine if the student is eligible to receive services.
4. The specific services to bze provided are organized into a Plan.

Relationships Between Subjects

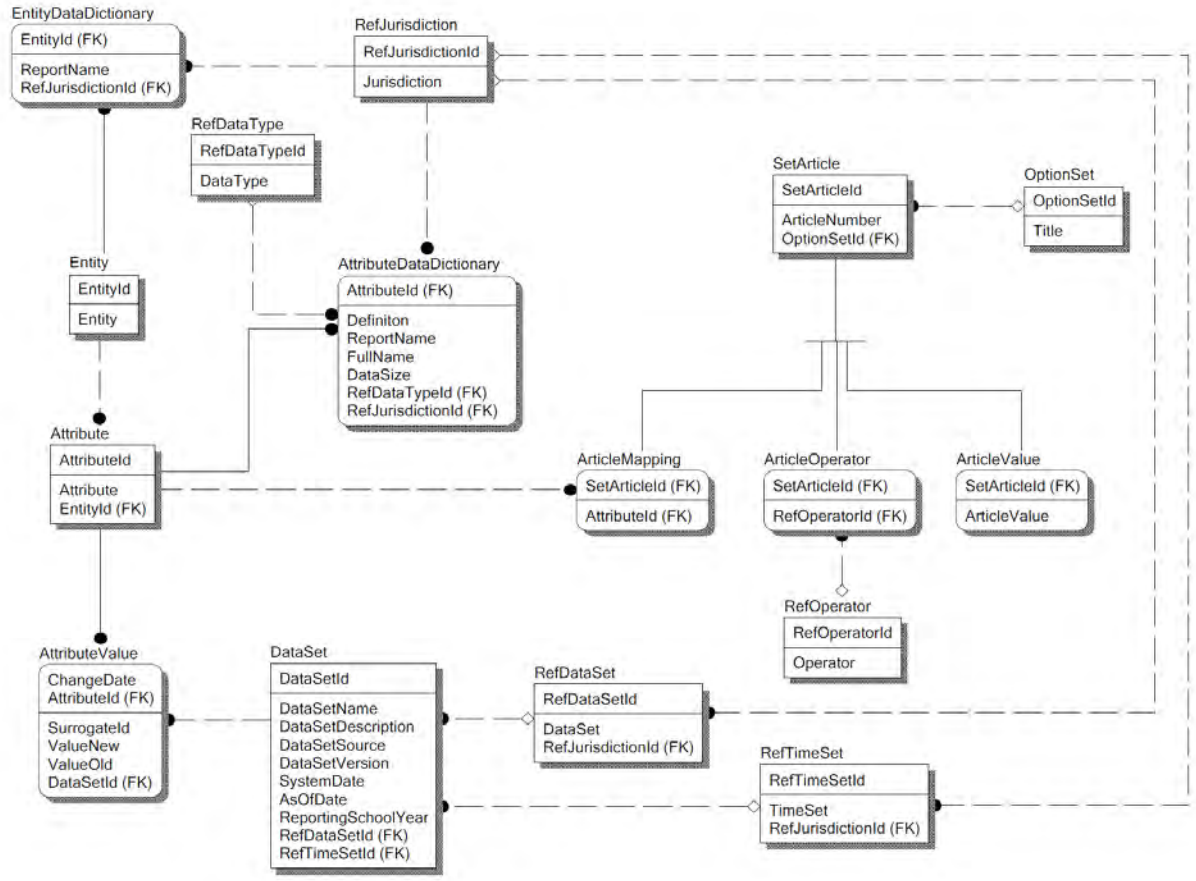
As important as the subjects are is the relationship between them. The conceptual model below shows the relationship between the primary subjects and sub-types. The model operates at the level of abstraction of people and organizations. Location is global.

ODS: A Physical View of the Logical Model



Entity Attribute Value (EAV)

The EAV schema is a normalized structure for recording changes to the ODS and mantaining each jurisdictions official data dictionary and maps to other data dictionaries and specifications.



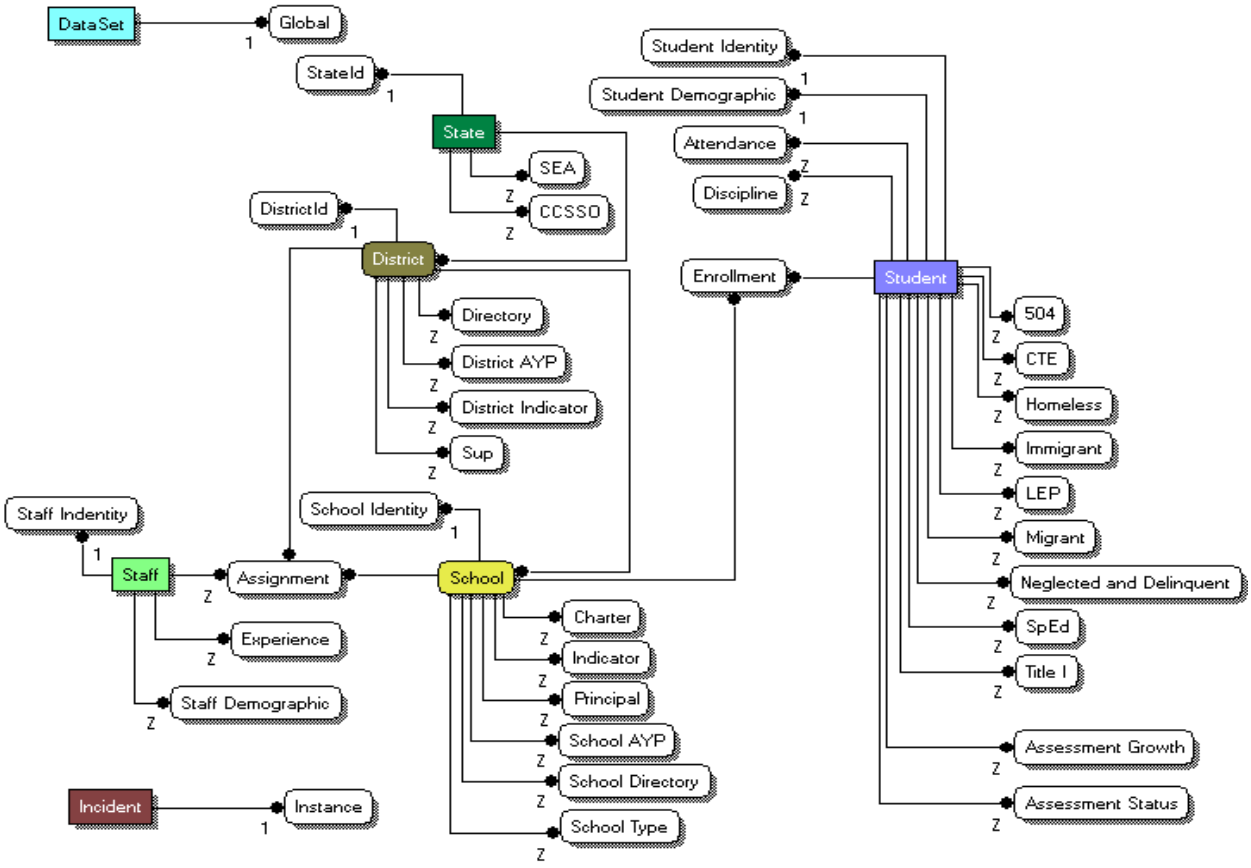
(1) The **AttributeDataDictionary** table is used to store the ODS metadata and RDS Data Dictionary of the State Core Workbook.

(2) One possible way of creating maps from the ODS to the RDS would be to represent attributes in ODS to create a results set to represent part or all of the reports in RDS. This would enable persistency for ad hoc reporting.

(3) **RefJurisdiction** is used to store the jurisdiction of the specific instance of the model being used. For example, ISBE would be stored as a value in the **Jurisdication** field in the **RefJurisdiction** table to indicate whether a specific value is local to a jurisdication (e.g. LEA code) or is a global (e.g. Sex) value.

RDS: Snapshot

The RDS schema is a single theoretical reporting data structure. In implementation, multiple versions of the RDS would be used and optimized together, however, a single, standard RDS schema can be used as a foundation of **common transformations** to create a data set "as of" a specific date. Subsequent transformations (such as exclusions/filters) can be layered next to create usage optimized data marts.



Additional Logic:

1. Student transcript is a view of a student profile. Student profile is a portion of an RDS snapshot drawn from across the ODS.

GLOSSARY OF KEY TERMS

Abbreviated Term	Full Term	Definition
ACF	Administration for Children and Families	An organization within the Department of Health and Human Services that is responsible for federal programs that promote the economic and social well-being of families, children, individuals, and communities.
Assessment		The use of a test to gauge a person's progress relative to established standards or expectations.
Attribute		A characteristic that describes the entity.
Campus		The grounds on which a postsecondary institution or branch is situated.
CCAP	Child Care Assistance Program	State-administered program that helps low-income families pay for child care.
CCDBG	Child Care Development Block Grant	Authorizes Child Care and Development Funds to make grants to states to assist low-income families with child care.
CCDF	Child Care Development Funds	Funds authorized by the Child Care and Development Block Grant Act, and by Section 418 of the Social Security Act, to assist low-income families or families receiving or transitioning from temporary public assistance in obtaining child care so they can work or attend training programs or school.
Center-based		Services that are provided in a local or community center.
Chief	State superintendent, commissioner of education, secretary of education	The head of an SEA.
Child care		A center-based or home-based provision of care for children provided by someone other than the child's parent.
Child Outcomes		Indicators of child progress that OSEP requires all state early intervention and preschool special education programs to report.

Combination Option		A program providing services in both center setting and home settings.
Conceptual Model		The conceptual model describes, in pictures and/or words, the logical and physical models.
Current Data Set		Current data sets typically represent the most current, normalized data available, either directly in the transactional source or updated from the transactional source as frequently as possible. The primary table in the State Core Current Data Set is the Enrollment table. There exists one record for each unique entrance or exit into a grade, school, or district. This data set should run longitudinally between school years and should not break between school years.
Data marts		Data marts are facets of the data warehouse, typically geared toward specific user groups. For instance, an Education data warehouse might have a K-12 data mart, a PS data mart and a financial data mart.
Data Sets		The actual data, not the metadata (the cells, not the column heads).
Delegate		An entity to which funds are delegated.
Derived	Derived Elements	Elements that are derived from other elements.
DEWIS	Dropout Early Warning Intervention System	DEWIS provides the data necessary to determine which students are at the greatest risk of dropping out. Based on this information, schools can take action to reduce their dropout rates.
Display Values	Option Set	The acceptable values optimized for display or field length.

Early Childhood Special Education		Early Childhood Special Education serves children ages 3–5 and provides special services to children diagnosed with developmental delays and disabilities. Federal funds come from the Individual with Disabilities Education Act (Part B, Sec 619), and many states supplement these funds to meet the demand for services.
Early Head Start		A branch of Head Start programs that serve expectant mothers, infants, and toddlers.
Early Intervention Programs		Early Intervention provides special services to children ages birth-3 who are diagnosed with developmental delays and disabilities. Federal funds come from the Individual with Disabilities Education Act (Part C) and many states supplement these funds to meet the demand for services.
EAV	Entity-Attribute-Value	A normalized structure for recording changes to the ODS and mantaining each jurisdictions official data dictionary and maps to other data dictionaries and specifications.
EC	Early Childhood	EC care starts at birth and can encompass a wide variety of health, human services, and early education services.
ECDC	Early Childhood Data Collaborative	A collaboration of national organizations brought together around the premise that aligned early childhood data systems can improve child outcomes.
ECE	Early Childhood Education	The programs and services dedicated to the education and development of children from birth to 8 years old.

EDEN	Education Data Exchange Network, EDFacts	EDEN is a centralized portal through which states submit their educational data to the U.S. Department of Education. EDEN is comprised of three main components: (1) the EDEN Submission System (ESS), an electronic data system capable of receiving data on over 100 data groups at the state, district and local levels; (2) the EDEN Survey Tool (EST), which collects data supplementary to the ESS data; and (3) the EDEN staging database, a holding area for newly submitted data.
Eligible		Able to participate in a program in accordance with guidelines or requirements for participation.
Enrolled		Registered at the school to receive educational services.
Entity		The person, place or thing that the attribute is about.
ESEA	Elementary and Secondary Education Act, No Child Left Behind, NCLB	The Elementary and Secondary Education Act of 2002.
Evaluation		Under IDEA, an evaluation is the process of determining whether a child has a disability and/or requires special education services. The evaluation draws information from a variety of sources including formal screenings, assessments and information given by the parents.
Even Start		An ECE program intended for children younger than 7-9 years old (depending on the state) and designed to improve both child and adult literacy.
FACES	Head Start Family and Child Experiences Survey	A longitudinal study of nationally representative sample Head Start programs administered every three years.

Family Outcomes		Indicators of family progress that OSEP requires all state early intervention and preschool special education programs to report.
Full day		A program providing center-based services for 6 hours or more per day.
Grantee		An entity that applies for and receives grant money from a funding stream.
Head Start		Federally-funded preschool program that aims to prepare the children of low-income families for K12 schools.
Health care		Any services that screen, monitor, promote, and/or provide for the optimal physical, mental, and developmental well-being of a person.
Home school		The resident school or district that has jurisdiction for where the student lives.
Home visits		The visits made by home visitors to children enrolled in a home-based program option.
Home-based		Services provided within the child's home.
IDEA	Individuals with Disabilities Education Act	The Individuals with Disabilities Education Act of 2004.
IEP	Individualized Education Plan	A plan that captures the student's educational and developmental goals, as well as how those goals will be met. It escribes actions for the student and family as well as any modifications and accommodations to be made by the school and/or teachers.
IFSP	Individual Family Service Plan	Crafted with child's family and IFSP team, captures parents' priorities and concerns, establishes desired outcomes, identifies strategies and services, and provides a timeline for services
Institutions		An institution offering education to students at the postsecondary level.

IPEDS	Integrated Post-Secondary Educational Data System	The primary source for data on colleges, universities, and technical and vocational postsecondary institutions in the United States. Sponsored by the National Center for Education Statistics (NCES), IPEDS was implemented to help NCES meet its mandate to report full and complete statistics on the condition of postsecondary education in the United States.
K12	elementary and secondary education	The educational services offered by LEAs through IDEA Part C early intervention, pre-K through high school, and continued IDEA services through age 21
K12 Schools	Schools	Any school operated by an LEA
Kindergarten		The first year of K12 services provided by LEAs. Students enroll at age 5
LEA	Local Education Agency	The SEA-authorized agencies that operate K12 schools
Licensed Child Care		Child care serves children ages birth–age 13 and provides non-parental care for children in either centers or home-based settings. Child care programs operate in a wide variety of settings and vary widely in the programs and services they offer to the children and the educational requirements of the staff. Licensed child care includes any program that the state licenses as meeting minimum standards, usually related to health and safety
Locally Designed Option		A program providing services through an alternative program variation that has been formally approved by the Office of Head Start
Logical Model		The logical model is a representation of data, organized in terms of entities, attributes, and relationships.
Member	Member school, member district	The school/district accountable for the student for AYP.

Metadata		Data about data (element names, field length, data type, option sets, validation rules, relationships, transformations, etc).
NCES	National Center for Educational Statistics	NCES provides data about education to federal and state agencies. The National Center for Education Statistics (NCES) is the primary federal entity for collecting and analyzing data related to education.
NEDM	National Education Data Model	A conceptual model funded by the US Department of Education and coordinated by the Council of Chief State School Officers that provides a common framework for what information needs to be collected and managed locally in order to enable effective school leadership and improve student outcomes
NIEER	National Institute for Early Education Research	Research institute whose work focuses on supporting high-quality early childhood education. Publishes the State Preschool Yearbook.
ODS	Operational Data Store	Represents the SLDS's most current data. The ODS is optimized for storage of a record for each relationship between a person and organization. Attributes can be updated in an existing enrollment record or a new enrollment can be added.
Official Data Sets		Some Snapshot Data Sets are official and typically involve some amount of validation and certification, which introduces inherit latency.
P20		Early childhood (EC), elementary and secondary (K12), post-secondary (PS), and workforce (WF) elements.
Part B		Part of IDEA that provides for children diagnosed with disabilities or special-needs between the ages of 3-21
Part C		Part of IDEA that provides for children diagnosed with disabilities or special-needs between the ages of birth and 3

Part day		A program providing center-based services for less than 6 hours per day
PESC	Post-secondary Electronic Standards Council	PESC promotes the implementation and usage of data exchange standards.
Physical Model		The physical model is the set of tables described by the logical model. It includes all of the database artifacts required to create relationships between tables.
PIR	Program Information Report	Report administered by the Office of Head Start that contains aggregate data on the children, families, services, and staff of Head Start and Early Head Start programs nationwide
Preschool		State- or privately-funded ECE programs that cater to children ages 3-4 and prepare them for Kindergarten
Private School		A school not run by the local, state, or Federal government.
Provider Program		A set of early childhood services including health, human services, and early education services.
PS	Post-secondary, higher education	Higher education that students can only enroll in after earning a high school diploma or the equivalent.
PS Programs		A combination of courses and related activities at the postsecondary level organized for the attainment of broad educational objectives as described by the postsecondary institution.
PS Schools		An educational entity within a postsecondary institution that focuses on one academic sector (e.g. school of art, school of business).

RDS	Reporting Data Store	Optimized for reporting. The primary structure is a snapshot of active students enrolled as members and teachers assigned to schools on a specific day. Additional data marts are created to support specific reporting requirements, such as EDEN, balanced scorecards and other school and district aggregate reports.
REA	Regional Education Agencies, counties, BOCES, or intermediary units	Region or county-level education agencies
Reporting Program		For the purposes of vertical reporting and counting, eligible students can be classified as: Special Education, LEP, Migrant, Homeless, Neglected and Delinquent, Medicaid, Title I, CTE, Immigrant, 504
Resident	Resident school, resident district	The school/district with jurisdiction for where the student lives.
SCODS	State Core Operational Data Store	A fully conforming and normalized (attribute option sets factored to separate tables) central repository optimized for storage, not entry or reporting.
SDS	Staging Data Store	All of the repositories involved in the collection, validation, and transformation process.
SEA	State Education Agency	State-level government agencies that are responsible for providing education-related information, resources, and technical assistance to schools and residents
Service by	Service school, service district	The school/district where student attends and receives services.
SIS	Student Information Systems	SIS is a system used for storing and managing student data.
SLDS	State longitudinal data system	A system designed to track student data across time and space

Slowly Changing Dimensions		Type 1 (update) apply today's reality to all past records (more common outside of education). Type 2 (insert) preserve the past and only apply the current going forward (more common in education).
Snapshot Data Set		Snapshot data sets are typically fixed or dynamic views of an Current Data Set at a particular point in time, partially de-normalized with conforming dimensions, and optimized for aggregation and reporting. Snapshot data structures are used in design of data warehouses and datamarts.
SpEd	Special Education	Special Education is the implementation of individualized education plans (IEPs), at no cost to parents/guardians, to meet the unique needs of children with disabilities. In some states, special education covers gifted children as well.
Staff		Anyone who is employed by an educational institution: Administrator Aide District Administrator Evaluator Faculty-Postsecondary Paraprofessional Professional Development Provider School Administrator Staff Member Substitute Teacher Teacher Trainer Volunteer
State Pre-kindergarten		State pre-kindergarten serves children ages 3-5. It is a program funded and regulated by the state that provides a classroom-based early education experience to children one or two years before kindergarten entry, primarily in schools or centers. State and local funding is typically distinct from child care subsidies, although they can be combined to support the same pre-k program.

Datastore		Datastore is generally synonymous with database, the distinction being that datastores are often denormalized, report-oriented data.
Student		A child enrolled in a school. A student can be enrolled in a school/district as a member, resident, or service client.
The Model	State Core Model	The Core Model is a logical model with conceptual model context and physical model examples. It includes data that describes the relationships between the entities, attributes, and other fields relevant to early childhood through post-secondary education.
Transforms		As part of the transformation process, codes are mapped to display values and derived elements are created.
Types of Data Sets		Data set types distinguish the periodicity and context of a particular instance of data to enable valid reporting. There are two primary data set types and various others: 1) snapshot, 2) current. Typically snapshot data sets are used for official reporting (e.g. EDEN) and current data sets are used for operational data-driven decision making. Current Data Sets can include fully transactional/real-time or near real-time updates from one or more transactional sources. Snapshots Data Sets result from the inherent latency caused by validation and certification to increase data quality.
USED	United States Department of Education, ED	United States Department of Education
Validates		Rules that ensure clean data.
Value		The meaning of the display value
Vertical Reporting		Reporting that goes from a school through the district to the state and/or federal level.