



## METADATA DICTIONARY – Course Number Crosswalk (State/District/SCED)

A crucial success factor of any enterprise education data system is the adoption of comprehensive metadata standards—and compliance with them. ESP Solutions Group can work with your education agency to standardize data elements, indicators, naming conventions, definitions, codes, and formats for improved data quality, comparability, and interoperability.



ESP has provided nationally recognized expertise in the domain of education data and metadata since 1993. We specialize in working with education agencies to document data about data (metadata). Our combined knowledge and experience with metadata come together in **DataSpecs®**, a metadata inventory tool that facilitates sharing of data across all applications without the need to reformat them time and time again. More specifically, DataSpecs is used by ESP to manage the documentation of each data collection, repository, indicator/index, and output/report through our metadata services.

The data elements entered into DataSpecs can be linked (mapped) to data elements in existing education agency data dictionaries or to national standards, including Common Education Data Standards (CEDS), the National Center for Education Statistics (NCES) Handbooks, *EDFacts*, the Schools Interoperability Framework (SIF), and the National Education Data Model (NEDM).

DataSpecs is an application that manages an education agency's metadata. This enables the agency, among many other benefits, to:

- Improve the overall quality of the organization's data,
- Increase the proper interpretation and use of data,
- Increase the availability of data to decision makers in a timely manner and in a usable format, and
- Enhance the value of a longitudinal information system by ensuring that it is sustainable and extensible.

In general, these benefits are realized through processes that ensure all applications, software products, and databases align and comply with the organization's enterprise data standards. This is accomplished through processes that:

- Control redundancies in data collections that impose unnecessary burden on staff;
- Reduce inconsistencies in definitions of data elements across repositories that cause lack of comparability in analyses;
- Align with standards that ensure compliance with federal reporting mandates; and
- Specify formats for files that greatly facilitate the design, building, implementation, and management of statewide data collection systems.



### WHY MUST AN EDUCATION AGENCY HAVE A METADATA DICTIONARY?

#### Eleven Objectives Met Using ESP's DataSpecs® Metadata Dictionary Tool

There are many reasons an education agency needs DataSpecs to manage its metadata. In general, metadata are data about data, not the data themselves. So, DataSpecs is a tool useful for describing how an organization, specifically an education agency, manages its data to ensure quality and usability.



Following are the major reasons an education agency uses DataSpecs. Typical problems that are heard around education agencies are stated. Then for each, an objective is presented and an example is provided along with a sample report to illustrate what DataSpecs produces.

<b>Problem Heard</b>	<b>MY PEOPLE WASTE TIME REPORTING THE SAME DATA OVER AND OVER.</b>
<b>Objective 1</b>	<b>To reduce the burden imposed by the redundancy from collecting and storing the same data multiple times, often with conflicting definitions, formats, and codes.</b>
<b>Example</b>	The data elements (represented as “items”) on each data collection throughout the agency are entered into DataSpecs. Each item is mapped to a common element that represents all of the items across all collections that are similar. This creates a linkage across all the agency’s collections and allows analysis of the redundancy. The office/steward may then determine which redundancies can be deduplicated and which are necessary.
<b>DataSpecs Report</b>	Element Profile (for a single element, a report showing all collections and repositories where the element is used as an item.)

<b>Problem Heard</b>	<b>HOW CAN WE KNOW IF THESE COURSES ARE EQUIVALENT ACROSS DIFFERENT SCHOOLS AND DISTRICTS?</b>
<b>Objective 2</b>	<b>To align local courses to state and/or national (SCED) course classification systems to allow the crosswalking of course codes for electronic reporting across entities using state or national standards.</b>
<b>Example</b>	A district and SEA want to create a teacher-student data link but do not have local to state course mapping. To do so, they upload their course catalogue into DataSpecs and run the AutoMapping function. Local courses are mapped to SCED numbers, reviewed by local staff, accepted or edited as appropriate, and finalized. A file is downloaded into the local student information system and the SCED codes are imported. The state can use SCED now for all districts.
<b>DataSpecs Report</b>	Local to SCED Course Mapping

<b>Problem Heard</b>	<b>WE ARE BUYING A NEW SOFTWARE APPLICATION. HOW DO WE TELL THE BIDDERS WHAT THEY MUST BE SURE THEIR DATA MODEL WILL MATCH OUR DATA STANDARDS?</b>
<b>Objective 3</b>	<b>To create the comprehensive functional data requirements for a new software application, database, or data store to ensure interoperability with extant systems.</b>
<b>Example</b>	The education agency is procuring a data warehouse.
<b>DataSpecs Report</b>	Repository Profiles (for each of the major repositories that will need to be incorporated into the data warehouse); Output Profiles (for each of the major outputs that will need to be produced from the data warehouse).

<b>Problem Heard</b>	<b>THE DATA WE GET ARE WRONG, BUT NO ONE KNOWS HOW TO FIX THEM. WE WONDER WHAT DECISIONS PEOPLE MADE WHEN THEY SUBMITTED THE DATA WE SEE REPORTED.</b>
<b>Objective 4</b>	<b>To document the business rules that apply to the data in a collection, a repository, or an output to ensure appropriate interpretation and use.</b>
<b>Example</b>	An LEA submits a “Teacher/Class/Student” data file to its SEA. It goes first to the SEA’s State Report Manager application for the checking of business rules. From DataSpecs, these rules have been captured and are being enforced before the data can be certified for use by the SEA. Examples: <ul style="list-style-type: none"> <li>— Class size must be fewer than 45.</li> <li>— Teacher identifier must be valid (&gt;5000000000, &lt;6000000000).</li> <li>— Student cannot be in more than 8 classes.</li> </ul>
<b>DataSpecs Report</b>	Business Rule Profile

<b>Problem Heard</b>	<b>WE HAVE TO RE-ENTER DATA INTO MULTIPLE SOFTWARE APPLICATIONS EVERY TIME A STUDENT’S INFORMATION CHANGES.</b>
<b>Objective 5</b>	<b>To increase the interoperability among information systems to ensure efficient and accurate exchange of data.</b>
<b>Example</b>	When a student enrolls in a school, that student’s demographics and family characteristics need to be entered into multiple local and state applications. All of those applications must use the same element dictionary attributes for efficient exchange (without crosswalking or translation). DataSpecs will hold the item/element name, definition, codes for each application (considered a repository) and align them with the standard element definition as adopted by the agency to ensure interoperability. If SIF is adopted, DataSpecs maps to SIF and the objects in which the elements appear.
<b>DataSpecs Report</b>	Repository Profile; SIF Alignment Report



<b>Problem Heard</b>	<b>EVERY TIME A NEW DEMAND FOR DATA ARISES WE INITIATE ANOTHER DATA COLLECTION.</b>
<b>Objective 6</b>	<b>To respond efficiently with existing data without imposing unnecessary increased burden when new mandates for data arise.</b>
<b>Example</b>	The Legislature passes a bill requiring the SEA to determine how many times the SEA asks an LEA each year to include their superintendent's email address on a report. There are three possibilities. Ask the LEAs, poll the SEA offices, or run a DataSpecs report.
<b>DataSpecs Report</b>	Element Profile (for a single element, a report showing all collections and repositories where the element appears as an item.)

<b>Problem Heard</b>	<b>WHO IS THE GO-TO PERSON FOR OFFICIAL DATA WHEN MORE THAN ONE OFFICE HAS THE DATA?</b>
<b>Objective 7</b>	<b>To supplement this calendar with data element level detail identifying the authoritative data source for each data element used for the organization's official statistics and for required reporting.</b>
<b>Example</b>	The Deputy State Superintendent of Schools is meeting with the SEA staff to discuss grant applications, and everyone has been arguing over the number of low-income students in the state. What is the real number?
<b>DataSpecs Report</b>	Official Statistics: Source Data Elements

<b>Problem Heard</b>	<b>HOW DO I KEEP UP WHEN ALL THE REPORTS ARE DUE? HOW DO I KNOW WHEN THE NEW OFFICIAL DROPOUT RATES WILL BE PUBLISHED? HOW DO I KNOW WHICH OFFICE IS THE PLACE TO GO FOR OFFICIAL STATISTICS?</b>
<b>Objective 8</b>	<b>To maintain and publish a comprehensive calendar and directory of the periodicity of the organization's official data collection and reporting activities.</b>
<b>Example</b>	The State Board of Education Chair is addressing the Legislature and wants to know when the annual dropout statistics will be announced. The Superintendent of the largest urban district is cutting staff but first wants to know when the state data report is due for funding.
<b>DataSpecs Report</b>	Periodicity of Official Statistics

<b>Problem Heard</b>	<b>DO WE REALLY HAVE ALL THE DATA REQUIRED FOR EDFACTS? WHAT ARE WE MISSING?</b>
<b>Objective 9</b>	<b>To analyze and identify the gaps between required data mandates, needs, and available data.</b>
<b>Example</b>	EDFacts has become a continual series of submission files from an SEA to USED throughout an annual cycle. Currently there are 105 submissions, 205 files, 2,407 elements, and 253 distinct elements. An SEA needs to know at any time if there is a gap between these requirements and the available data in its repositories.
<b>DataSpecs Report</b>	EDFacts Map and Gap Analysis

<b>Problem Heard</b>	<b>I NEED TO COLLECT ALL NEW DATA FOR MY RESEARCH PROJECT.</b>
<b>Objective 10</b>	<b>To provide data for research from existing sources without burdening schools with new collections.</b>
<b>Example</b>	A graduate student who is designing a dissertation study of student mobility patterns and their effects on graduation rates may not know that the SEA has a common student identifier across multiple years and all schools in the state. With a full understanding of which data files contain enrollment, withdrawal, dropout, and graduation data, the researcher may be able to design a study that uses only extant data.
<b>DataSpecs Report</b>	Repository Profiles

<b>Problem Heard</b>	<b>CAN WE TRUST THESE DATA?</b>
<b>Objective 11</b>	<b>To increase the quality of the data throughout the agency.</b>
<b>Example</b>	A fully loaded and accessible metadata dictionary is the best documentation to show that an education agency has established and is following standards for quality data.
<b>DataSpecs Report</b>	All DataSpecs reports support this objective.



### PRICING

The cost of the project depends on the desired customization and integration of the resulting DataSpecs tool. This project is most often combined with ISInsight™, Data Governance and Enterprise Architecture Services, CourseWalk™, or as part of a larger systems integration project. Smaller, more tailored projects are also possible – ESP will work with your agency at no charge to determine the best possible solution that fits within your budget.

### WHY ESP?

ESP Solutions Group specializes in improving the quality of education data. Our staff has worked directly with the development of all NCES data handbooks, Handbooks On-line, the U.S. Department of Education's metadata dictionary, and many other national efforts to define best practices for education data collection and reporting. ESP personnel have advised many local school systems, all 52 state-level education agencies, and the U.S. Department of Education on the practice of P-20 data management. We are nationally recognized as leading experts in understanding the data and technology implications of state reporting, the Common Education Data Standards (CEDs), No Child Left Behind Act (NCLB), EDEN/EDFacts, the Schools Interoperability Framework (SIF), and EDFacts Shared State Solution (ES3).

### CourseWalk™

**CourseWalk™ + DataSpecs® = Teacher/Student Data Link**

Standardized course codes are essential to tracking student performance and improving instruction in the long run. They are also extremely useful for standardizing information in student transcripts. ESP's CourseWalk tool facilitates the matching of local course codes to state or national course code standards. Adding CourseWalk to your DataSpecs project completes the teacher/student data link. See Objective 2.

Select a Collection: After School Care Snacks Application Agreement - V1

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#### Collection Details Report

**After School Care Snacks Application Agreement**

Collection Number:      Collection Child Set: Nutrition Services      Status: Active      Version: 1      Effective Date: 5/13/2008      Expiration Date:

Abstract: Web based, OIT

Mandate: Federal

Collection Type: Entitle      Detail Level: School

Collection Method: Web Form      Privacy Restriction:

Months Collected:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Office:      Office Phone:

Steward: Heidi, Claire

Phone: (123) 555-2358      Extension:

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Section_No	Number	Item	Type	Data Length
1	1	Name of Local Educational Authority	Text	25
2	1	Name of School	Text	25
2	1A	School Hours		0
2	1B	Hours for After School Program		0

### DataSpecs Sample Reports

Shown here are 3 of the more than 30 reports currently included in DataSpecs.

Select Element: Primary Disability - V1 View Report

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#### Element Details: Primary Disability

State Number	Local_Alias	Data Type	Data Length	Data Format	Min	Max	Element_Id
536	Primary Disability	Number	2	NN	0	99	1939

**Element Categorizations (Domain/Section/Category)**

Student/Health Conditions/Disabling Conditions

Definition	Description
The major or overriding disability condition that best describes an individual's impairment.	

**Collection Information**

Collection	Item	Version	Effective Date	Expiration Date
Basic School Approval Annual Update-Private	Primary Dis	1	05/14/2008	12/1/2010
Report of Services to Students with Disabilities Part II	Exceptionality	1	05/13/2008	
Report of Services to Students with Disabilities Part I	Primary Disability	1	05/13/2008	12/1/2010
Request for Approval of Placement of Exceptional Students	Primary Disability	1	05/13/2008	
Application for Gifted & Talented Educational Program Approval Program Cost for State Subsidy	Disability	1	05/13/2008	
LEA Verification Summary Report	Pri Dis	1	05/13/2008	12/1/2010
Vocational Student Information	Primary Disability Type	1	05/13/2008	

**Repository Information**

Repository Type

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#### EDEN Element Related Mapping

EDEN Element	Definition	EDEN Submission Files	Element Name	Local Number	Definition
Primary Disability Type	The major or overriding disability condition that best describes an individual's impairment.	002, 005, 006, 009, 088, 089, 090	Primary Disability	536	The major or overriding disability condition that best describes an individual's impairment.
Grades Offered (School)	The grade level(s) offered by the school or district.	029, 039	Grades Offered		The grade level(s) offered by the school or district.

ESP Solutions Group  
**DataSpecs**

1 of 1

### Customized Reports

Additional reports may be designed according to your needs and specifications.