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Washington State K-12 Education Data Gap Analysis

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EXECUTIVE SUMMARY

In 2009, the Washington State Legislature established a vision for a comprehensive K–12 education improvement data system. The overall intent of this system is to provide Washington stakeholders with information that addresses critical questions about student progress and the quality and costs of education in the state of Washington. The system should also incorporate data that allow the state to address the state's prioritized research and policy questions.

To assist with the design and operation of the data system, the Legislature created a Data Governance Group within the Office of Superintendent of Public Instruction (OSPI) with responsibility for implementing key tasks with consultant support. Steps included: 1) the identification of a priority list of research and policy questions the state data system should provide educators with the capacity to address; 2) a gap analysis comparing the current status of the state's data system with the information needs associated with the research and policy questions, the legislative expectations in ESHB 2261, and the data system requirements in the federal American Recovery and Reinvestment Act of 2009 (ARRA); and 3) a technical capabilities gap analysis at the classroom level to help ensure that data from the state's statewide longitudinal data system are accessible to key stakeholders including principals, teachers, and other district leaders. OSPI contracted with PCG Education to assist in implementing these critical tasks.

Methodology

PCG Education's methodology for identifying the data system gaps included the following components:

- Interviews with 34 stakeholder group representatives identified by OSPI. The interview process provided an overall view of the data collected and available throughout the department. The interviewees were asked questions on the sources and uses of data, specific key questions those individuals have been asked but are unable to address due to lack of data or data connections, and validation of existing documented metadata.
- Development of Washington Metadata Workbook designed to capture metadata about the appropriate people, systems, data items, and data dictionary elements necessary for the gap analysis. The workbook provided the normative list of data elements, or data dictionary, across the enterprise from which data requirements and availability were compared.

Summary Recommendations

Discussions with OSPI data managers and well as key state stakeholders interviewed through the Research and Policy Questions portion of the project revealed a consistent focus on the need and desire for the ability to collect, retrieve, and analyze quality data in order to guide instruction and improve student achievement as well as meet the reporting requirements of the state legislature and federal government. To do this will require consolidation of many of the agency's disparate data collections into a comprehensive longitudinal data system. This comprehensive data system, along with a rigorous and

structured metadata documentation process, will allow for uniformity in definition, standards, and use. Washington has a robust student data collection system in CEDARS but no data warehouse or reporting solution. Washington is currently in the process of releasing an RFP to procure and develop the data warehouse in accordance with state requirements and vision specified in their successful 2009 State Longitudinal Data System (SLDS) grant award.

The following table displays recommendations gathered and synthesized through the data gap analysis and validated against the data dictionary.

Summary Recommendations		
ID	Recommendation / Gap	Discussion
1	**Use the SharePoint workbook created through this project as the common data dictionary to guide development of the OSPI K-12 and ERDS P-20 SLDS data warehouses and data marts.**	**OSPI and ERDC now have a significant resource available through the metadata mapping contained in the Workbook. Both agencies would benefit from the continued development of the workbook and data roadmap.**
2	**Enable valid teacher effect calculations based on student growth percentiles.**	**Although Washington is moving ahead with plans to implement a student growth model based on the Colorado Student Growth Percentile approach, include explicit plans to link to teacher for the purpose of providing additional insights and evaluation models supported in Race to the Top.**
2.1	Calculate and load student growth percentile into CEDARS data warehouse once built	Include in data warehouse in order to expose to reporting capabilities once built.
2.2	Establish section entrance and exit for class roster in CEDARS. Class schedule by course by date.	Currently course attendance is snapshot based.
2.3	Create Current, Prior Year 1 assessment score growth.	Support longitudinal growth structure recommended by NEDM.
3	**Develop student drop-out / early warning prevention and reporting module using the ABC indicators recommended in the NGA report (Absence, Behavior, Course Grade, and Over Age for Grade)**	**Washington is examining this issue through the Building Bridges Workgroup. Incorporation of at risk factors in a state longitudinal data system offers distinct advantages over local systems for understanding risk at the state level. Washington should examine drop-out early warning systems in the context of response to intervention and positive behavior solutions to provide the necessary support for at risk students.**
3.1	Collect student and incident level discipline data through CEDARS.	This was a theme echoed consistently throughout the project in order to establish critical cross linkage of data and answer Research and Policy questions of interest.

3.2	Improve student attendance attributes to enable accurate accounting of student excused absences and school calendars.	OSPI has the foundation in place to collect count of days attended but lacks the ability to determine an excused absence. Either define excused versus unexcused absence or collect school calendar to determine attendance. Create physical database structure to allow collection of daily attendance in the future.
3.3	Extend course classification to all grades.	OSPI has intentions to "turn on validation" thus improving the use of the codes.
4	**Replace teacher certification system with one capable of collecting all required educator information including post-secondary performance and relevant major.**	**The certification system currently lacks many of the features requested via research and policy questions as well as requires error-prone manual intervention.**
4.1	Develop plans to phase out paper systems / collections: CTE, eCert, Special Education discipline, e.g.	
4.2	Data in eCertification is not connected to Certificate DB; data not directly used.	Data is manually entered twice.
4.3	Collect degree information and institution related to certification.	Significant interest was expressed in having more clear information on teacher education background
4.4	Extend system to maintain professional growth plans connecting specific course schedules and student outcomes with teacher qualifications.	Vision for system extends to include tracking a teacher's entire history and their academic credentials including their course, continuing education, degree, certificates, endorsements, etc.
5	**Commit to a feasibility study to use CEDARS data to drive apportionment. Run multiple models approximating Apportionment FTEs with CEDARS head counts. Determine variance. Design legislative action as needed.**	**Recommend detailed studies of variance of possible funding using CEDARS as first step in determining district level differences between accounting methods.**
5.1	Washington should expand its chart of accounts for all school financial transactions and report the transaction data to OSPI for analysis and comparisons within the state data warehouse once built.	
6	**OSPI should establish a database of record for each data element in the EDFacts collections depending on the required reporting period. Those data can then be published to the data warehouse as the official record of the submission.**	**Although the CEDARS data warehouse does not yet exist, when established it should contain data snapshots for all official EDFacts reports.**

6.1	Build EDFacts data mart as part of data warehouse.

INTRODUCTION: BACKGROUND AND PURPOSE OF THE PROJECT

In 2009, the Washington State Legislature established a vision for a comprehensive K–12 education improvement data system. The overall intent of this system is to provide Washington stakeholders with information that addresses critical questions about student progress and the quality and costs of education in the state of Washington. The system should also incorporate data that allow the state to address the state's prioritized research and policy questions.

According to ESHB 2261, the objectives of the data system are to monitor student progress; have information on the quality of the educator workforce; monitor and analyze the program costs; provide for financial integrity and accountability; and have the capability to link across these various data components by student, by class, by teacher, by school, by district, and statewide (Washington State Legislature, 2009). The intended audiences for reports from the data system "include teachers, parents, superintendents, school boards, legislature, OSPI, and the public" (OSPI, December 2009). Information regarding the legislation is available in Appendix A.

The vision of the Washington Legislature anticipates emerging data system capacities that allow for the linkage of student level data with educator and financial data and calls for a transformation from a state level "allocation and compliance" data system to an "education improvement" data system—a system that will facilitate decision making at all levels (OSPI, November 2009). As shown in Table 1, Part 2 of ESHB 2261 specifies the 12 components to be included in the data system.

Table 1. Twelve Components of the Washington State Data System	
1.	Comprehensive educator information, including grade level and courses taught, job assignment, years of experience, higher education institution for degree, compensation, mobility, and other variables
2.	Capacity to link educator assignment information with educator certification
3.	Common coding of secondary courses and major areas of study at the elementary level or standard coding of course content
4.	Robust student information, including student characteristics, course and program enrollment, state assessment performance, and performance on college readiness tests
5.	A subset of student information elements to serve as a dropout early warning system
6.	The capacity to link educator information with student information
7.	A common standardized structure for reporting the costs or programs at the school and district level with a focus on the costs of services delivered to students
8.	Separate accounting of state, federal, and local revenues and costs
9.	Information linking state funding formulas to school and district budgeting and accounting procedures
10.	The capacity to link program cost information with student performance information to gauge the cost effectiveness of programs
11.	Information that is centrally accessible and updated regularly
12.	An anonymous, non-identifiable replicated copy of data that is updated at least quarterly and made available to the public by the state

To assist with the design and operation of the data system, the Legislature created a Data Governance Group within the OSPI responsible for implementing the tasks delineated below with consultant assistance.

Table 2. Tasks of the Data Governance Group

- Identify critical research and policy questions.
- Determine new reporting needs—identify the reports and other information that meet user needs.
- Create a comprehensive needs requirement document detailing the specific information and technical capacity needed by school districts and the state.
- Conduct a gap analysis of current and planned information.
- Focus on financial and cost data necessary to support the new K–12 financial models and funding formulas.
- Define the operating rules and governance structure for K–12 data collection.

Data Governance Group members were selected by State Superintendent Randy Dorn in July and August 2009 and the group began meeting monthly in August. After its formation, the Data Governance Group completed several activities to accomplish the tasks described in Table 2. Since that time OSPI has reported that the Data Governance Group has:

- Held ten meetings since August 2009 hearing from teachers, principals, counselors, business officials, superintendents as to their unique data needs and the utility of current OSPI systems.
- Adopted Implementation Guidelines for the K-12 Data Governance System (available at http://www.k12.wa.us/K12DataGovernance/pubdocs/DataGovernanceManualV-1.pdf) during the December 16, 2009 meeting. This document outlines the data management processes, policies, and priorities for all K-12 data.
- With the assistance of PCG Education, identified the research and policy questions of interest to state stakeholders. The research and policy questions report are available on the data governance web site at: http://www.k12.wa.us/K12DataGovernance/Objectives.aspx .
- Reviewed the current status of Washington's K–12 education data system, including the status of systems such as the Comprehensive Education Data and Research System (CEDARS), a student information data collection begun in August 2009, and eCert (an educator database), Apportionment re-hosting project, and a review of plans for data system enhancements.
- Initiated work on the fiscal, student, and class size reports OSPI is to post on the Internet, including processes to ensure data accuracy and compliance.
- Created a website to share information about the Group's responsibilities and activities with the general public.

In designing the education improvement data system, the task of identifying a priority list of questions followed by a gap analysis represented critical first steps. In December 2009, Public Consulting Group (PCG) was retained by the Office of Superintendent of Public Instruction on behalf of the Data Governance Group to engage in a short term project. OSPI contracted with PCG Education to assist in implementing a process to:

1. Identify the priority research and policy questions the state data system should provide educators with the capacity to address based on a review of the most current national literature

on state data systems and input from the Washington stakeholders who would be using the system. Stakeholders included legislators, advocacy groups, researchers, the State Board of Education, the Professional Educator Standards Board, teachers, parents, and district and school administrators.

2. Conduct a data gap analysis comparing the current status of the state's data systems with: 1) the information needs identified in the prioritization of research and policy questions; 2) the legislative expectations in ESHB 2261; and 3) the data system requirements in the federal American Recovery and Reinvestment Act of 2009 (ARRA) and subsequent grant programs.
3. Conduct a technical capabilities gap analysis at the school and classroom level to assess whether data from the state's statewide longitudinal data system are accessible to key stakeholders including principals, teachers, and other district leaders.

PCG Education assisted OSPI in indentifying and prioritizing research and policy questions of interest as described above in task number 1. That report is available on the OSPI Data Governance website at http://www.k12.wa.us/K12DataGovernance/default.aspx

This report presents the results of the data system gap analysis conducted by PCG Education (task number 2 described above).Through the course of the engagement, the individuals and groups that PCG Education spoke to more thoroughly defined the vision for state data system, as well as the interim initiatives proposed to address several of the gaps. In a series of interviews and conversations, key questions emerged that needed to be addressed in order to move the longitudinal data system towards concrete action steps in implementing this vision. PCG Education collected feedback from participants about what data systems and collections were already in place, what types of data are available, and the goals in connecting data systems toward an integrated data warehouse. The result of those interviews, analysis of OSPI's data systems, and recommendations are presented below.

PCG Education also assisted OSPI in performing the technical gap analysis at the school and classroom level as described by task 3 above. That report is available on the OSPI Data Governance website at http://www.k12.wa.us/K12DataGovernance/default.aspx

METHODOLOGY

The methodology for identifying the data system gaps centered on two primary activities: 1) interviews and discussions with key OSPI information technology and business stakeholders; 2) the creation of a Washington Metadata Workbook.

Stakeholder Interviews

At the start of the project, OSPI developed a list of internal stakeholders to participate in the interview process. Interviews were conducted with each of the stakeholders to gather information about their use and need for data. These interviews were conducted March through May 2010 with 34 stakeholder representatives. The 34 interviewees consisted primarily of individuals within OSPI who are members of the Data Management Committee, three of whom also sit on the Data Governance Group. As "Data Stewards" and "Data Owners," this group represented most program areas within OSPI including student, educator, financial, and cross-sectional federal reporting. The IT Project Management Director, Enterprise Architect, and Data Governance Coordinator also played critical roles in providing system and data expertise throughout the process. PCG Education also interviewed two individuals from the Education Research and Data Center (ERDC), which is Washington's P-20 statewide longitudinal database, housed in the Office of Financial management. For a complete list of interviewees, please see Appendix B.

The interview protocol included an explanation of the goals of the project and metadata workbook, questions about the interviewee's sources and uses of data, specific key questions those individuals have been asked but are unable to address due to lack of data or data connections, and validation of existing documented metadata. Appendix C includes the project description and interview protocol given to all interviewees.

All interviews were conducted by phone using an Internet hosted WebEx session to view the metadata workbook and share other documentation. Members of the IT Project Management Office or Enterprise Architecture attended the majority of interviews. PCG Education set the context for the interview and led a brief introduction to the metadata workbook at the start of each interview. The interview notes were typed as the session was in progress as well as edits made directly to the workbook to help ensure the accuracy and timeliness of the information. The interviews provided a critical opportunity to validate and refine data in the workbook as well as discover additional data collections and systems. Follow up information including the incorporation of additional data elements, systems, or collections, as well as the synthesis and integration of the notes, was done following the interview. PCG Education followed up with several individuals to clarify specific points and gather additional information.

Because of the open ended nature of the interviews, each one was different and focused on the unique aspects of the program or domain. This allowed the interviewer to more thoroughly discuss the area of greatest interest or importance to them. The notes and metadata from these interviews was captured in the Washington Metadata Workbook.

Washington Metadata Workbook

The collection and documentation of OSPI metadata is at the heart of the data system gap analysis process. The identification of a data gap ultimately occurs by comparing between data desired and data collected and stored. However, it is also important that the elements being compared are normalized in order for the process to yield meaningful results. That is, one needs to compare apples to apples. Establishing a consistent process and format for documenting metadata is important not just to tell if a desired data element is collected, but also to compare definitions, allowable values, frequency of collection, etc. Thus gaps may expose themselves not just as the absence of data collected, but also in terms of timing or level of aggregation. For example, in Washington suspensions / expulsions data are collected, but not as a student level attribute but instead an aggregate number of incidents at the district level are reported to OSPI, therefore preventing student level associations with these data.

To assist in the documentation of OSPI metadata, PCG Education developed a Microsoft Excel documentation template designed to capture metadata about the appropriate people, systems, data items, and data dictionary elements necessary for the gap analysis. The workbook provided the generalized framework for the metadata inventory process and was customized to suit the OSPI working environment through conversations and review with OSPI staff. The OSPI "Data Owners" were all asked to comprehensively review the workbook as well as the preliminarily identified gaps. Their edits and findings are all incorporated into the delivered version of the workbook.

While PCG Education would recommend OSPI consider adopting a more formal metadata documentation tool and process, the workbook serves as a key starting point for developing a data roadmap and a more formal comprehensive metadata library. The ultimate goal for the workbook is to produce a normative list of data elements, or data dictionary, across the enterprise that can serve as the foundational description of all data collected and reported, with common definitions and option sets.

The Washington Metadata Workbook provided the framework for performing the data gap analysis and as such the PCG Education process closely mirrored the tabs contained within the workbook. The process for documenting this metadata did not always follow a linear path, but instead tended to be iterative. For example, the identification of an additional system led to an interview in which an additional collection was identified for which there were additional people to interview, and so forth. The following table summarizes the content and results of the interview and metadata documentation process. The workbook itself is not suited to be included as an appendix but is a significant deliverable provided separately to Washington. The workbook is available at http://www.k12.wa.us/K12DataGovernance/default.aspx

Table 3. Washington Metadata Workbook Description and Contents

Overview	An overview of the metadata documentation process flow and definitions of each tab and intended purpose.
Glossary	A glossary of terms used throughout the workbook, organized by tab.
People	A list of individual stakeholders throughout OSPI with department, titles, and contact information. The proper identification of data sources throughout OSPI starts with

	people. One of the critical purposes of the interview process was to identify all authoritative data sources. By talking to the technical and business resources, PCG Education was able to identify additional people, systems, and data collections that are documented in the workbook. In total, 34 individual stakeholders were formally interviewed as part of the documentation gathering and validation process.
Systems	A list of systems containing information on system name, office responsible for data, list of sub-systems, basic description, business and technical owners, and reference to item level repository. In total, 17 columns of information on 67 distinct systems and 174 iGrants packages were identified and documented. Please see Appendix D for a complete list of systems reviewed.
Items	List of all items collected through systems, assessments, spreadsheets, and external vendor hosted systems. Includes name, definition, data type, and references to original source. Starting with a list of 56,013 data elements, PCG Education identified 16,269 of those which are collected from districts. The remaining 39,744 data items are not collected from districts but instead serve the internal operations of OSPI. Of those 16,269 data elements collected, 15,645 (96%) come from iGrants.
Data Dictionary	List of all data elements necessary for the data gap analysis. Provides name, definition, data types, option values, and mappings to the National Education Data Model and EDEN/EDFacts collections. PCG Education mapped most major OSPI systems to the National Education Data Model, v. 2.0.: CEDARS, Certificate, eCert, EDS/EMS, and SAFS. Approximately 26 columns of information with 465 element level mappings were completed.
Interview Notes	The chronological log of all interview notes categorized by topic. The interview notes were reviewed for identified gaps and integrated into other parts of the workbook as necessary and are preserved for reference. In total, there were 397 individual free form text line items from the 34 interviews.
Questions	Deliverable of this work: an analysis of the data necessary and data gaps for the high priority research and policy questions as identified by part one of this project. See *Research and Policy Questions Gaps* discussion below.
2261	Deliverable of this work: an analysis of the legislative expectations on data and gaps. See *Analysis of ESHB 2261 Expectations and Gaps* discussion below.
ARRA	Deliverable of this work: an analysis of the data requirements to fulfill the ARRA assurances. See *Analysis of ARRA Expectations and Gaps* discussion below.
Gaps	Deliverable of this work: an analysis of data gaps to the National Education Data Model.

	See *Analysis of Data Dictionary Gaps* discussion below.
Reference	An inventory of other sources consulted as part of the data system gap analysis.
Indicator Model	A sample of Key Performance Indicators suggested by PCG Education which includes specific statistics for determining risk, warning, neutral, good, and exemplary status for Student Engagement, Academic Engagement, and Students at Risk. These indicators were not reviewed or suggested by OSPI but can be built from the data elements specified by National Education Data Model and mapped to Washington data elements.
Assessments	A list of assessments by grade and content area with notes on dates administered and score type. In total, 10 columns of information on 68 assessments were identified and documented.

National Education Data Model

The National Education Data Model (NEDM) is a project funded by the US Department of Education and coordinated by the Council of Chief State School Officers. Its mission is to create an open framework based on current standards for education data systems to:

- describe relationships between and among data sets; and
- create an open framework based on current data standards to build education data systems.

NEDM provides a P – 20 data resource and common framework and language for collecting, comparing, and using data to improve schools and answer important research and policy questions. It also supports a blueprint of data available for current and future collection and reporting. This includes a set of consistent data definitions and an architecture that will allow for improved data quality as well as interoperability from multiple perspectives:

- Educators: Use the data model to identify requirements
- Vendors: Extract a software-specific conceptual model
- Researchers: Prepare a research design

The development of NEDM involved taking important education questions, issues, or processes, and identifying the data that need to be tracked in order to answer the questions, address the issues, or reflect the processes involved.

NEDM 2.0

The Washington Metadata Workbook is based on the second version of NEDM "State Core" data elements, officially released March 2010. Extending the questions based approach taken with the initial development of NEDM, version 2.0 explicitly included federal reporting requirements and other national standards:

- EDEN/EDFacts (federal compliance reporting) record level elements
- National Center for Education Statistics (NCES) Handbooks

- School Interoperability Framework (SIF) v2r3
- Post-secondary Electronic Standards Council (PESC)
- Data assurance called out in the American Recovery and Reinvestment Act (ARRA)
- The ten "essential elements" of the Data Quality Campaign (DQC) for statewide longitudinal data systems

The result was a merged set of common elements for students, programs, school districts, and post secondary institutions. PCG Education led the State Core Team, a group focused on building out and validating the core of the model by:

- Mapping all 86 EDEN/EDFacts collections to the data element list
- Mapping 33 state longitudinal data systems to the data model.
- Interviewing 19 state departments of education

The following are several key insights gained during the development of NEDM 2.0 applicable to Washington:

Insight #1: A national standard should be used to create comparable types of enrollment. One of the earliest insights that helped direct the development of the initial version of the State Core Data Set was the recognition that all states are dealing with three primary types of school and district enrollment attributions. While each state may call it something different, the archetypical case involves a student *resident* in one district, *enrolled* as a member in a school in the same or in a second district, and *serviced by* either of those or by a third district for special education or other services. Mapping each state to these three enrollment types is necessary to establish data comparability.

Gap: No gap. Washington is able to distinguish between these three entity types using a Primary School indicator in the CEDARS School Student File (C).

Recommendation: Washington could consider using the NEDM State Core naming convention for enhanced clarity and comparability with other states. Consider the use of, "Resident", "Member", and "Serviced by" enrollment types to distinguish the multiple levels of enrollment.

Insight #2: The creation of standardized data sets is important. It is impossible to properly document a data set without first distinguishing certain key factors to establish the context of the data. Primary among these factors are the time and type of the data set. For example, there is a large difference in the creation and usage of a snapshot, current, or other specialized data set such as a student cohort. A *snapshot* data set often must be created for EDEN/EDFacts and other federal reporting. It involves a known set of transformations from source systems into a structure that is flattened to a particular point in time. This is how the CEDARS collections currently function. This structure is also useful for Online Analytic Processing (OLAP) cube development and other analytic structures. *Current* data sets come much closer to the structure of normalized and operational structures. They always contain the most current data available for the given attributes. That is, some data within the data set may have been updated within the past several days and some may not have been updated for several months. They are more flexible and accommodate more frequent updates and heterogeneous data sets, but are more complex to use properly for reports and aggregate analysis. Additional *specialized* data sets must be

created to establish the unique context for National Governors Association graduation rate cohorts, assessment, discipline incidents, special education, organization scorecards, and directories. Each of these data sets is included in the State Core and carried through the model.

Gap: There is not yet a standard practice within Washington with regards to identifying dataset metadata.

Recommendation: Adopt NEDM State Core entity.attribute structure for datasets:

DataSet.Data_Set_ID
DataSet.Data_Set_Name
DataSet.Data_Set_Description
DataSet.Data_Set_Version
DataSet.Data_Set_Type
DataSet.System_Date
DataSet.Reporting_Date
DataSet.Timeset
DataSet.Reporting__School_Year

Insight #3: It is necessary for NEDM to add "Dimensions." In developing the State Core taxonomy and snapshot dataset, it became useful to group student and other attributes by type and establish a standard, non-alphabetical presentation order. While many terms could be used (i.e. attribute type, group, category), the term "dimension" was selected to describe this grouping after conversations and interviews with state data architects confirmed the importance of this structure to facilitate data management, reporting, and analytic cube development.

Gap: Washington does not yet have a data dictionary that describes data in the OSPI or ERDC enterprise by primary entity and attribute.

Recommendation: Adopt the Data Dictionary in the Washington Metadata Workbook as a standard for classifying all core data elements.

Connection to Research and Policy Questions

Phase one of PCG Education's engagement with OSPI resulted in a report detailing the high priority research and policy questions that stakeholders throughout the State of Washington want the longitudinal data system to be capable of addressing. Please see OSPI Data Governance website at http://www.k12.wa.us/K12DataGovernance/default.aspx for a copy of the report. The questions were derived from a combination of interviews with key stakeholders, a national literature review, and the development and analysis of three targeted surveys at the district, school, and state level. This approach enabled respondents to answer questions appropriate for their position and level and allowed an analysis of the varying data priorities of each group of stakeholders.

This process identified 48 research and policy questions where there was high consensus about the priority of the questions. While reflecting a comprehensive array of educational issues, these 48

questions represent a relatively modest set of high priority research and policy questions, given the hundreds of questions a state data system might answer, and the fact that the questions represent nine categories of information, as well as linkages across the nine categories. Within this set of 48 questions, 18 were in the top ten rated questions of one or more of the stakeholder groups surveyed.

With a well documented set of OSPI metadata and mapping to NEDM, PCG Education was able to identify what data are immediately available to answer the 48 research and policy questions by decomposing the questions into their component data elements. This decomposition resulted in a list of data elements that would be necessary to answer each question. These data elements are documented in the Workbook and mapped to their NEDM entity / attribute identification. With a specific list of data elements needed to answer the questions and a list of data elements available within OSPI, the gaps become apparent. See Research and Policy Question Gap Analysis for further detail.

GAP ANALYSIS

The following section provides highlights from the Washington Metadata Workbook which was provided to OSPI as a separate deliverable. The reader is strongly encouraged to review the workbook for additional detail supporting the data element gaps and recommendations.

Analysis of ESHB 2261 Expectations and Gaps

In November 2009, OSPI submitted a preliminary report to the Legislature on the current capacity of school districts and the state to implement each of the specific components required to meet ESHB 2261 objectives. In several cases the requirements center on developing additional capabilities, systems, or processes, and not necessarily data. However, where possible, PCG Education has developed a gap analysis on the key data elements and linkages necessary to meet each legislative expectation using the Washington Metadata Workbook.

1. *Comprehensive educator information including: grade level taught, courses taught, building or location, program, job assignment, years of experience, the institution of higher education from which the educator obtained his or her degree, compensation, class size, mobility of class population, socioeconomic data of class, number of languages and which languages are spoken by students, general resources available for curriculum and other classroom needs, number and type of instructional support staff in the building*

   Gap: Although most components identified as comprehensive educator information are currently collected, in order to successfully meet the expectation several new elements must be collected.

   Recommendation:

Data Element Gaps:	
The institution of higher education from which the educator obtained his or her degree	**Gap:** In some instances Washington can determine the institution from which an educator received their certification, but there is not a field to account for institution of higher education. **Recommendation:** Collect Staff.Degree Granting Institution.
Number of languages and which languages are spoken by students	**Gap:** Washington does collect native language and language that is spoken at home, however, does not currently capture data for students that speak multiple languages. For example, a student who speaks Spanish, French, and English is a native French speaker and communicates in English at home. WA does not capture that the student can also speak Spanish. **Recommendation:** Either collect multiple home language codes per student or seek legislative change.
General resources available for curriculum and other classroom	**Gap:** There is currently no Washington data element nor a NEDM attribute that accounts for this expectation.

needs	**Recommendation:** Legislature clarify intent (see findings from research and policy questions analysis).

2. *Capacity to link educator assignment information with educator certification including: type of certification, route to certification, certification program, certification assessment, evaluation scores*

Gap: Because staff certification number is collected across each system (CEDARS, eCert, and S-275), certification information can be linked to educator assignment information. However, not all certification items identified by the Legislative expectations are currently collected.

Recommendation:

Data Element Gaps:	
Route to Certification	**Gap:** If the intention of the legislature is to collect an education profile, there is currently not a WA data element that accounts for this expectation. **Recommendation:** Collect Staff.Certification Path
Certification Program	**Gap:** Currently, WA has certification program data available only for in-state certifications. **Recommendation:** Collect Staff.Certification Program upon initial application or renewal.
Evaluation Scores	**Gap:** There is currently not a Washington data element that accounts for this expectation. **Recommendation:** Collect Staff.Evaluation Score in accordance with the implementation of SB 6696.

3. *Common coding of secondary courses and major areas of study at the elementary level or standard coding of course content*

Gap: While a common coding scheme of secondary courses has been implemented this school year for high school courses, there is currently no collection of major areas of study at the elementary level besides general "Elementary Curriculum".

Recommendation: To meet this expectation, elementary schedules must be consistently broken down to their major areas or standard coding. Expand course classification to all grades.

4. *Robust student information including: student characteristics, course and program enrollment, state assessment performance, and performance on college readiness tests*

Gap: Many student characteristics are obtained at the individual student level through CEDARS data collections but there are gaps according to the National Education Data Model and the research and policy questions analysis.

Recommendation: Expand collection to include elements necessary to meet Legislative expectations. The following table lists all data element gaps. While Washington meets its federal reporting requirements via EDFacts, not all data are collected at the student level but instead are collected as aggregate counts by the district. Those elements are collected but are included below as suggestions of additional student level attributes. In addition, NEDM exposes the best practices as validated with other state departments of education. Many of the following data elements may not be appropriate for Washington but are presented here with a justification for consideration.

Table 4. NEDM Gaps – Specific Data Element List

Entity	Category	Element	Justification
Student	Identity	Generation Code	Generation Code (Jr., III, etc.) should be separated into its own field so that is not mistakenly added to last name.
Student	Identity	Personal Title/Prefix	Profile
Student	Identity	Other Name	Profile
Student	Demographic	City of Birth	Used for identity verification
Student	Demographic	State of Birth	Used for identity verification
Student	Demographic	Family Size	Profile
Student	Enrollment	Address Type	Profile
Student	Enrollment	Street Number/Name	Profile
Student	Enrollment	Apartment/Room/Suite Number	Profile
Student	Enrollment	City	Profile
Student	Enrollment	Name of County	Profile
Student	Enrollment	State Abbreviation	Profile
Student	Enrollment	Zip Code	Profile
Student	Enrollment	Telephone Number Type	Profile
Student	Enrollment	Telephone Number	Profile
Student	Enrollment	Primary Telephone Number Indicator	Profile
Student	Enrollment	Electronic Mail Address Type	Profile
Student	Enrollment	Electronic Mail Address	Profile
Student	504	504 Accommodation plan	Necessary to track students covered under Section 504 to ensure student needs are met
Student	SpEd	IEP Start Date	Identifies which students have an active IEP for child count dates
Student	SpEd	IEP End Date	Identifies which students have an active IEP for child count dates
Student	SpEd	Secondary Disability Type	Identifies students with more than one disability
Student	SpEd	Awaiting Initial Evaluation for Special Education	Used for federal reporting and to monitor local compliance for evaluating students
Student	SpEd	Evaluated for Special Education but Not Receiving Services	Used for OSEP compliance processes

Student	Title I	Title I Participant Type	Used in EDFacts reporting.
Student	Title I	NCLB Title I School Choice Applied	Used in EDFacts reporting.
Student	Title I	NCLB Title I School Choice Offered	Used in EDFacts reporting.
Student	Title I	Title I Supplemental Services Eligible	Used in EDFacts reporting.
Student	Title I	Title I Supplemental Services Applied	Used in EDFacts reporting.
Student	Title I	Title I Supplemental Services Offered	Used in EDFacts reporting.
Student	Title I	Supplemental Service Provider	Used in EDFacts reporting.
Student	Title I	Title I Support Services Received	Used in EDFacts reporting
Student	CTE	Displaced Homemaker	Needed for the Perkins CTE Act
Student	Immigrant	Country of Citizenship	Profile
Student	Homeless	Homeless Unaccompanied Youth Status	Used in EDFacts reporting
Student	Homeless	Homeless Served Status	Used in EDFacts reporting
Student	Homeless	Homeless Services Received	Used to determine whether student is participating in a McKinney-Vento program
Student	Homeless	Homeless Primary Nighttime Residence	Necessary to provide transportation to school
Student	Neglected and Delinquent	Neglected or Delinquent Program Participant	Used in EDFacts reporting
Student	Neglected and Delinquent	Length of Placement in Neglected and Delinquent Program	Used in EDFacts reporting
Student	Neglected and Delinquent	Neglected or Delinquent Program Type	Used in EDFacts reporting
Student	Neglected and Delinquent	Pre-Post Test Indicator (N and D)	Used in EDFacts reporting
Student	Neglected and Delinquent	Pretest Results	Used in EDFacts reporting
Student	Neglected and Delinquent	Progress Level (N and D)	Used in EDFacts reporting
Student	Assessment Status	Technology Literacy Status in 8th Grade	Used in Growth Calculations and student profile reports. Very useful in analytics as a dimension for analysis.
Student	Discipline	# Days Suspended in a School Year (Total)	Student suspension is a clear sign that the student may be at risk for dropout.
Student	Discipline	Number of Days Expelled In a School Year	Used in EDFacts reports and an important indication of serious behavior problems.
Incident	Instance	Student Unique ID	Connecting the Incident to the Student enables analysis and is necessary for data management. CEDARS collects, but not linked to student in Attendance and Weapons system.
Incident	Instance	Student Role	The student's role in the incident is important.
Incident	Instance	Date	Data should be kept for analysis.
Incident	Instance	Discipline Reason	Used for EDFacts reports that require a count of incidents rather than a count of students.
Incident	Instance	Discipline Method - Firearms (IDEA)	Used for EDFacts reports that require a count of incidents rather than a count of students.

Incident	Instance	Interim Removal (IDEA)	Used for EDFacts reports that require a count of incidents rather than a count of students.
Incident	Instance	Interim Removal Reason (IDEA)	Used for EDFacts reports that require a count of incidents rather than a count of students.
Incident	Instance	Educational Services	Used for EDFacts reports that require a count of incidents rather than a count of students.
Staff	Identity	Name Prefix	Used to establish the identity of staff members.
Staff	Identity	Generation Code/Suffix	Used to establish the identity of staff members.
Staff	Assignment	Contract Beginning Date	Used to establish teacher assignment to a school or district.
Staff	Assignment	Secondary Teaching Assignment (Academic Subject)	Used in EDFacts reporting.
Staff	Assignment	MEP Session Type	Used in EDFacts reporting.
Staff	Credential	Paraprofessional Qualification Status	Used in EDFacts reporting.
Staff	Credential	Degree Granting Institution	Teacher experience.
Staff	Credential	Technology Skills Assessed	Used in EDFacts reporting.
Staff	Credential	Technology Standards Met	Used in EDFacts reporting.
Section	Section	Location/Room #	Used to establish a student's relationship to a teacher in a particular section.
Section	Section	Session Name	Used to establish a student's relationship to a teacher in a particular section.
Section	Course	Available Credit	Used to establish a student's relationship to a teacher in a particular section.
Section	Course	Course Level	Used to establish a student's relationship to a teacher in a particular section.
Section	Staff	Section Entry Date	Used to establish a student's relationship to a teacher in a particular section.
Section	Staff	Section Exit Date	Used to establish a student's relationship to a teacher in a particular section.
School	AYP	AYP Status	Profile
School	AYP	Alternate Approach Status	Profile
School	AYP	Improvement Status	Used in EDFacts reporting.
School	Assessment	Advanced Placement (AP) Mathematics Program Offered	Profile
School	Assessment	Advanced Placement (AP) Other Program Offered	Profile
School	Assessment	Advanced Placement (AP) Science Program Offered	Profile
School	Type	Availability of Ability Grouping	Profile
School	Type	Distinguished School Status	Profile
School	Type	Focus of Alternative School	Profile
School	Type	Magnet Status	Used in EDFacts reporting.
School	Type	Corrective Action	Used in EDFacts reporting.
School	Type	Restructuring Action	Used in EDFacts reporting.
School	Type	School Improvement Funds Allocation	Used in EDFacts reporting.
School	Type	Shared Time Indicator	Profile

School	Type	AMAO Progress Attainment Status for LEP Students	Used in EDFacts reporting.
School	Type	AMAO Proficiency Attainment Status for LEP Students	Used in EDFacts reporting.
School	Type	Elementary/ Middle Additional Indicator Status	Used in EDFacts reporting.
School	Type	GFSA Reporting Status	Used in EDFacts reporting.
School	Type	REAP Alternative Funding Indicator	Used in EDFacts reporting.
School	Type	Supplemental Services Provided	Profile
School	Indicator	High School Graduation Rate Indicator Status	Profile
School	Indicator	Persistently Dangerous Status	Profile
School	Indicator	Number of Computers with High Speed Ethernet or Wireless Connectivity	Used in EDFacts reporting.
School	Indicator	Number of Computers with Less than High Speed Connectivity	Used in EDFacts reporting.
School	Indicator	Total Number of Schools	Used in EDFacts reporting.
School	Indicator	Truancy Rate	Used in EDFacts reporting.
School	Indicator	Boys Only Interscholastic Athletic Sports	Profile
School	Indicator	Girls Only Interscholastic Athletic Sports	Profile
School	Indicator	Boys Only Interscholastic Athletic Teams	Profile
School	Indicator	Girls Only Interscholastic Athletic Teams	Profile
District	Directory	D-U-N-S Number	Directory
District	Directory	Supervisory Union Identification Number	Directory
District	Directory	Education Agency Type	Directory
District	Directory	Title I District Status	Directory
District	Directory	Operational Status	Directory
District	Directory	Grades Offered	Directory
District	Sup	Official Title of LEA Superintendent	Directory
District	AYP	AYP Status	Profile
District	AYP	Alternate Approach Status	Profile
District	AYP	Improvement Status	Profile
District	Indicator	Federal Programs Offered	Used in EDFacts reporting.
District	Indicator	Funding Allocation Type	Used in EDFacts reporting.
District	Indicator	Integrated Technology Status	Used in EDFacts reporting.
District	Indicator	Federal Funding Allocations	Used in EDFacts reporting.
District	Indicator	Number of Schools Classified as Persistently Dangerous	Profile

5. A subset of student information elements to serve as a dropout early warning system

Gap: Assuming Washington chooses to implement the National Governors Association (NGA) recommended early warning dropout model, daily attendance and student level discipline are required and currently not available.

Recommendation: Washington should move forward with the NGA model and collect daily attendance and student level behavior data from all districts. Student course grades, grade level, and age are already available. Washington needs to define what constitutes an excused versus unexcused absence or collect district calendar information. Student behavior / discipline incidents are reported in aggregate by the district but should be collected and reported on a student basis.

In states across the nation, drop out early warning and intervention systems (DEWIS) are emerging as one of the most valuable applications of state longitudinal data systems to support school operational issues. Washington is also currently examining this issue through ESSB 6403. While school districts will always have the most up-to-date attendance and granular local assessment data, a state longitudinal data system can provide a strong foundation of near-real-time data integrated across districts and school years to provide an effective data set to screen students most at risk.

The National Governors Association (NGA) nicely summarizes near consensus conclusions on appropriate state actions synthesized from the growing national body of research, "[E]arly warning data systems are neither expensive nor difficult to build because they are based on basic academic information already collected at the school and district levels: attendance, behavior, course achievement, and student age and grade. In numerous studies, indicators based on these data have been shown to be highly predictive of dropping out. Several studies suggest that grades are more highly predictive than test scores for graduation, but states with graduation tests should consider including low test scores as an indicator." ("Achievement for All" NGA, December, 2009).

6. The capacity to link educator information with student information

Gap: Capacity to link education information with student information takes place through the Washington field Course ID. This element is collected in both the Student Schedule File and the Staff Schedule File within CEDARs to provide the necessary linkage. However the course schedule is snapshot based – an indication of a student's schedule at the time of the file upload.

Recommendation: Establish section entrance and exit for student and staff schedules in CEDARS.

7. A common standardized structure for reporting the costs of programs at the school and district level with a focus on the costs of services delivered to students

Gap: A standardized structure for reporting the expenditures by school is not yet in place.

Recommendation: Washington should expand its chart of accounts for all school financial transactions and report the granular transaction data to OSPI for analysis and comparisons within the state data warehouse once built. Washington should continue to move forward to address the legislative requirement for school level expenditure accounting.

8. *Separate accounting of state, federal, and local revenues and costs*

Gap: A method for connecting costs to specific revenue streams is not in yet place, although OSPI is currently exploring options that would align each expenditure coding to a specified revenue stream.

Recommendation: OSPI should continue their exploration of this area. If adopted, the accounting manual should include appropriate guidance on methodologies and practices for capturing this linkage within detailed accounting records. OSPI should evaluate the cost associated with this effort in light of new funding formulas based on prototypical school structure as this requirement may become less important.

9. *Information linking state funding formulas to school and district budgeting and accounting procedures*

Gap: The method for collecting data to link state funding formulas to district budgeting does not yet exist.

Recommendation: Commit to a feasibility study to use CEDARS data to drive apportionment and create a standard chart of accounts for building and program level accounting. Conduct detailed studies of variance of possible funding using CEDARS as first step in determining district level differences between accounting methods. Run multiple models approximating Apportionment FTEs with CEDARS unduplicated head counts. Design legislative action as needed.

Creating a closed loop system, where apportionment is driven from an unduplicated headcount of students as reported through the state SLDS, will provide districts a powerful incentive to accurately and timely report their data, leading to an overall increase in quality and usability. However, Washington currently maintains distinct systems for these functions and must proceed cautiously when considering the implications of altering a funding approach developed over decades.

10. *The capacity to link program cost information with student performance information to gauge the cost effectiveness of programs*

Gap: Before linking program cost information, the effectiveness of a program alone must be measured. Further, one definition of "program" at the state level tends to include items like Title I, LEP, and Special Education. CEDARS collects this type of program participation. There are also, of course, many smaller initiatives such as an after school reading program, curricular software packages, etc. that may also need to be considered for cost effectiveness.

Recommendation: Making the assumption that this expectation is for state programs only, the collected codes must be expanded to include a complete list of programs that the State wishes to evaluate. Students can then be associated with these expenditure categories through the CEDARS program enrollment file. The generic program enrollment file in CEDARS provides a very flexible and forward thinking interface to expand data for future programs. The State will also need to define the entities that will be used to measure the effectiveness. Can state assessments be used longitudinally? Does each program have a diagnostic and exit assessment? The State will want to ensure these means of measurement are valid and acceptable. To link program cost information, *Expectation 8 (Separate accounting of state, federal, and local costs)* must be achieved and the State must be able to associate a total cost with each specific program.

11. *Information that is centrally accessible and updated regularly*

Gap: Washington does not have a centralized data warehouse.

Recommendation: Washington is proceeding with plans to procure a data warehouse and reporting solution. Physically moving or replicating all data within OSPI, even if required for reporting, to a central data warehouse is unnecessary so long as all the sources are known and well documented in the metadata documentation tool. OSPI has indicated its intention to create a database of record and schedule for each data element required for reporting. This would allow Washington the flexibility to report from a number of transactional systems as well as the data warehouse depending on the timing and scope of the report. It also supports the model of using the data warehouse for analytic reporting, thereby committing OSPI undertake a careful evaluation of the data elements stored in the data warehouse versus other transactional systems.

In terms of regularly updating the data, the State receives monthly (often more frequent) updates from all districts for the required CEDARS elements. The State should also establish data sets as recommended in the key insights with the development of NEDM as discussed above. Namely, OSPI will want to establish documented and standard logical data views for every official reporting period as well as current and cohort data sets.

12. *An anonymous, non-identifiable replicated copy of data that is updated at least quarterly and made available to the public by the State*

Gap: Many types of aggregate data are available via the OSPI website and de-indentified individual student level data is available by request for several specific report types. However, the state lacks a general mechanism by which to publish all its data in an anonymous, non-identifiable form as specified by this legislative requirement.

Recommendation: Develop a de-indentified data mart with appropriate suppression rules and refreshed periodically following official submission snapshot datasets, primarily from CEDARS using NEDM as the starting point. This data can then made available either directly or indirectly to the requestor via a web-based business intelligence tool or a delimited file format. In general, the more data that is published for each student, the more likely that student is uniquely identifiable. Washington will need to determine the minimum student count for each individual category of information published to prevent the identification of students. For example, if there are fewer than 10 special education students per school should those records be removed from the data set or not marked as special education?

Analysis of American Recovery and Reinvestment Act Expectations and Gaps

As stated by the U.S. Department of Education, the "overall goals of ARRA are to stimulate the economy in the short term and invest in education and other essential public services to ensure the long-term economic health of our nation." During the development of NEDM, the detailed ARRA assurances were initially incorporated into the Standards Comparison Report, which formed the basis of NEDM 2.0. PCG Education used this baseline to map Washington's data systems, thereby creating the link to data necessary to fulfill the requirements of ARRA.

There are four assurances that states are required to address in order to improve student achievement through school improvement and reform:

1. *Increase teacher effectiveness and address inequities in the distribution of highly qualified teachers*

Gap: Washington does not yet have a method to calculate teacher effectiveness.

Recommendation: OSPI should enable valid teacher effect calculations based on student growth percentile models. Calculate student assessment elements: Prior Year 1 [Subject] Student Growth Percentile for each year of assessment data available. Loading the student growth scores into the data warehouse, once built, will provide critical linkages between the teacher and financial data domains. Washington will need to develop the appropriate reports and professional development required on the proper use of growth data.

Within Washington and nationally there is great interest in examining methods for linking student performance to teacher evaluation models. However, this approach requires stakeholders to fundamentally change the way in which they judge education quality from status to progress and

this change is non-trivial. For example, evaluating teachers requires development of principals in the area of using evidence and data. Many states are grappling with developing models for teacher evaluation:

- Colorado recently passed SB10-191, part of which establishes a governor's Council for Educator Effectiveness; the bill redefines how teachers are awarded tenure
- Rhode Island is producing its Rhode Island Educator Evaluation Model and hopes to be operational for teachers and principals by 2011-12
- New Hampshire (SB 180) requires the development of a "performance-based accountability system" that includes measures of student growth to judge whether schools provide all students with the "opportunity for an adequate education"
- Some states (e.g., Virginia) are interested in using end-of-course assessments; issues arise with multiple-testing occurrences and other idiosyncrasies

Other key considerations and challenges when considering the limits of student growth percentile evaluation models:

- Roughly 70% of teachers DO NOT participate directly in large scale state assessment from which student growth percentiles are calculated
- Student growth percentiles CAN be calculated across different assessment forms, so long as the construct measured is similar and the student pool is large and enough and similar enough; constructs between assessments must be well correlated over time (at least 0.7 correlation needed).

Finally, 14 of the 48 (29%) Washington Research and Policy Questions specifically address teacher effectiveness in the classroom. Building out the data elements necessary to answer those research and policy questions will provide additional insight into this assurance. See *Research and Policy Questions Gaps* below for the detailed data elements.

2. *Establish and use a pre-K-through-college-and-career data system to track progress and foster continuous improvement*

Gap: No gap.

Discussion: Throughout the interview process both in this project and the Research and Policy Question interviews, the interest and importance of tracking students from early childhood to post-high school graduation was clearly expressed. This assurance has been met by the establishment of the ERDC. Washington has indicated its strong support of this capability through the development of the SLEDS system at ERDC via their successful 2009 ARRA SLDS grant awarded May 2010. This work will "extend those K-12 capabilities by incorporating longitudinal early-learning, post-secondary, and workforce information into a unified, comprehensive, and efficient P-20 system" (Washington State Application for Grants under the SLDS Recovery Act Grant).

3. *Make progress towards rigorous college- and career-ready standards and high-quality assessments that are valid and reliable for all students, including Limited English proficient students and students with disabilities*

Gap: While Washington does have a valid and reliable assessment system, it lacks the ability to link student growth to other educational entities and subgroups such as Limited English Proficient students and students with disabilities to determine the effectiveness of programs, evaluation on assessment, and reviews of the characteristics of high performing schools.

Recommendation: See discussion related to student growth percentiles in assurance number one above.

In addition, 27 of 48 (56%) of the Research and Policy Questions link student subgroups to the effectiveness of programs, evaluation on assessments, and review of the characteristics of high performing schools. Building out the data elements necessary to answer those research and policy questions will provide additional insight into this assurance. See *Research and Policy Questions Gaps* below for the detailed data elements.

4. *Provide targeted, intensive support and effective interventions to turn around schools identified for corrective action and restructuring*

Gap: There are three accountability models requiring the determination of specific indicators for Washington districts: the School Improvement Grant model, Adequate Yearly Progress, and the State Board of Education's new accountability model. However, Washington lacks the ability to calculate key performance indicators for all schools for at risk students and other operational metrics of interest.

Recommendation: Develop key performance indicators and statistics for determining specific risk, warning, neutral, good, and exemplary status for Student Engagement, Academic Engagement, and Students at Risk. These indicators can be built from the data elements specified by National Education Data Model and mapped to Washington data elements in the CEDARS data warehouse, once built. A sample of a potential indicator model is included below. Please see Washington Metadata Workbook for a complete list of sample indicators and required data elements.

Table 5. Example Key Performance Indicator Model for At Risk Students

Indicator	Risk	Warning	Neutral	Good	Exemplary
Attendance					
Index					
Current YTD Attendance Rate	<90%	90-95%		95-99%	100%
Last 7 Days Attendance Rate	<90%	90-95%		95-99%	100%
Last 30 Days Attendance Rate	<90%	90-95%		95-99%	100%

Prior Year Attendance Rate	<90%	90-95%		95-99%	100%
Current YTD Tardy Count	>10	5-10	2-4	1	none
Current YTD Attendance Rate + Low Income	<90% + low income				
Behavior					
Index					
Current YTD # Days Suspended	Suspended			Not Suspended	
Current YTD # Incidents					
Last 30 Days # Incidents					
Course Grades/Credits					
Index					
[Section] Term Grade	F	D	C	B	A
[Section] Year Grade	F	D	C	B	A
YTD # Ds or Fs in Core Classes	2+ Ds or Fs	1 D or F		No Ds or Fs	
PY1 # Ds or Fs in Core Classes	2+ Ds or Fs	2 D or F		No Ds or Fs	
Current GPA	<1.0		1.0-2.5	>2.5	>3.5
% Credits vs. On Track	<80%	80-95%	95-105%	105-120%	>120%

In addition, 18 of the 48 (38%) Research and Policy Questions compare data between schools and districts to determine the most effective schools and programs. Building out the data elements necessary to answer those research and policy questions will provide additional insight into this assurance. See *Research and Policy Questions Gaps* below for the detailed data elements.

Analysis of Data Dictionary Gaps

NEDM includes the organization of data by entity. An entity reflects the real-world function of the object. There are seven entity types defined in NEDM 2.0: Student, Incident, Staff, Section, School, District, and State. Each entity contains one or more categories to add further organization and hierarchy to the data model. The following table shows the number of categories and distinct data elements per entity and the overall number of Washington gaps to the National Education Data Model. Please see *Table 4. NEDM Gaps – Specific Data Element List* for the detailed data elements associated with this table.

Table 6. NEDM Data Element Gaps by Entity

Entity	Number of Categories	Number of Elements Within the Entity	Number of Washington Element Gaps	Percent Collected
Student	15	213	48	77%
Incident	1	13	8	38%
Staff	5	45	9	80%
Section	6	33	6	82%
School	8	59	30	49%
District	4	27	15	44%

State	3	13	0	100%

The fewest number of gaps in absolute terms are within the Student and Staff entities reflecting their relative maturity developed through the implementation of CEDARS and fulfilling federal reporting requirements. Included within the Data Dictionary mapping to NEDM is an element-level linkage to the EDEN/EDFacts collections, providing Washington with a direct link between what is federally required and what is currently collected.

EDFacts Granular Data Gaps

Gap: OSPI currently runs many separate data collections, each with its own data definitions. From these collections, OSPI submits the nearly 90 EDEN/EDFacts files required yearly. As these collections are largely separate and have limited interoperability, the data collected is often redundant and contradictory. For example, the count of free and reduced lunch students is via CEDARS but the official snapshot is collected via the child nutrition systems.

Recommendation: OSPI should establish a database of record for each data element in the EDFacts collections depending on the required reporting period. Those data can then be published to the data warehouse as the official record of the submission. As summarized in the following table, a total of 51 data elements would need to be incorporated to build an EDFacts data mart within the OSPI data warehouse, once built.

Note, while Washington meets its federal reporting requirements via EDFacts, not all data are collected at the student level but instead are collected as aggregate counts by the district. Those elements are collected but are included below as suggestions of additional student level attributes or attributes that are not collected via CEDARS but would need to be included in the data warehouse to build out an EDFacts data mart.

Table 7. EDFacts Data Element Gaps by Entity

Entity	Number of Categories	Number of EDFacts Elements Within the Entity	Number of Washington Element Gaps for EDFacts	Percent Available
Student	15	100	21	79%
Incident	1	9	5	44%
Staff	5	21	5	76%
Section	6	5	1	80%
School	8	17	15	12%
District	4	4	4	0%
State	3	11	0	100%

Table 8. EDFacts Gaps – Specific Data Element List

Entity	Category	Element
Student	Title I	Title I Participant Type
Student	Title I	NCLB Title I School Choice Applied
Student	Title I	NCLB Title I School Choice Offered

Student	Title I	Title I Supplemental Services Eligible
Student	Title I	Title I Supplemental Services Applied
Student	Title I	Title I Supplemental Services Offered
Student	Title I	Supplemental Service Provider
Student	Title I	Title I Support Services Received
Student	Homeless	Homeless Unaccompanied Youth Status
Student	Homeless	Homeless Served Status
Student	Homeless	Homeless Primary Nighttime Residence
Student	Neglected and Delinquent	Neglected or Delinquent Program Participant
Student	Neglected and Delinquent	Length of Placement in Neglected and Delinquent Program
Student	Neglected and Delinquent	Neglected or Delinquent Program Type
Student	Neglected and Delinquent	Pre-Post Test Indicator (N and D)
Student	Neglected and Delinquent	Pretest Results
Student	Neglected and Delinquent	Progress Level (N and D)
Student	Assessment Status	Technology Literacy Status in 8th Grade
Student	Discipline	# Days Suspended in a School Year (Total)
Student	Discipline	Number of Days Expelled In a School Year
Incident	Instance	Discipline Reason
Incident	Instance	Discipline Method - Firearms (IDEA)
Incident	Instance	Interim Removal (IDEA)
Incident	Instance	Interim Removal Reason (IDEA)
Incident	Instance	Educational Services
Staff	Assignment	Secondary Teaching Assignment (Academic Subject)
Staff	Assignment	MEP Session Type
Staff	Credential	Paraprofessional Qualification Status
Staff	Credential	Technology Skills Assessed
Staff	Credential	Technology Standards Met
Section	Course	Course Level
School	AYP	Improvement Status
School	Type	Magnet Status
School	Type	Corrective Action
School	Type	Restructuring Action
School	Type	School Improvement Funds Allocation
School	Type	AMAO Progress Attainment Status for LEP Students
School	Type	AMAO Proficiency Attainment Status for LEP Students
School	Type	Elementary/ Middle Additional Indicator Status
School	Type	GFSA Reporting Status
School	Type	REAP Alternative Funding Indicator
School	Indicator	High School Graduation Rate Indicator Status
School	Indicator	Number of Computers with High Speed Ethernet or Wireless Connectivity
School	Indicator	Number of Computers with Less than High Speed Connectivity
School	Indicator	Total Number of Schools
School	Indicator	Truancy Rate
District	Indicator	Federal Programs Offered
District	Indicator	Funding Allocation Type
District	Indicator	Integrated Technology Status

District	Indicator	Federal Funding Allocations

Research and Policy Questions Gaps

17 of 48 (35%) high priority Washington Research and Policy Questions are currently able to be answered with the data available via existing collections.

The research and policy questions were designed to be inclusive of the information priorities and the different categories of information cited in OSPI documents, the national literature, and by stakeholders. The survey items were organized around nine pertinent categories:

1. District and School Enrollment Trends
2. Program and Course Enrollment Trends
3. Student Achievement
4. Attendance, Discipline, Dropout, and Graduation Rates
5. Success and Risk Indicators, and Transitions
6. Program Outcomes
7. Teacher Workforce and Student Achievement
8. Cost Effectiveness
9. Cost Analyses

The following table shows the distribution of data gaps across the defined categories:

Table 9. Count of Research and Policy Questions Gaps by Category

Question Category	Questions Able to be Answered	Questions with Element Gaps	Percent Answerable
District and School Enrollment Trends	3	2	60%
Program and Course Enrollment Trends	3	0	100%
Student Achievement	8	2	80%
Attendance, Discipline, Dropout, and Graduation Rates	4	2	67%
Success and Risk Indicators, and Transitions	7	1	88%
Program Outcomes	1	2	33%
Teacher Workforce and Student Achievement	2	4	33%
Cost Effectiveness	0	4	0%
Cost Analyses	0	3	0%

The following table displays the detailed analysis of data required and gaps to answer each of the 48 high priority research and policy questions as derived from part one of this project.

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
District, State, and School Enrollment Trends					
1.1 Compared to state trends, what are the variations in district/school enrollment trends at different grade levels by gender, ethnicity, eligibility for free/reduced lunch, students in special education, students in ELL programs, and combinations?					No gap
	Student	Enrollment	Grade Level	Yes	
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Gender	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	Assumption: The Office for Civil Rights uses the acronyms ELL and LEP interchangeably as they have a similar meaning.
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	County District Code	Yes	
	Student	Enrollment	School Year	Yes	
1.2 What are the program and cost implications of demographic changes for specific subgroups, i.e., entry into special programs, need for intervention/remedial support, and additional personnel?					Data related to program cost information, staff count by program, and employee cost by credential type are required.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	Program Code	Yes	Assumption: Program information includes intervention information.
	Staff	Assignment	Program Assignment	Yes	
	Staff	Credentials	Teaching Field or Area Authorized	No	
	Finance	Staff	Staff Cost	No	
	Finance	Program	Program Costs	No	Have program cost, but not linked to specific subgroups and changes within the program.
1.5/1.7 What are the characteristics and academic profile of students who are new to the state and to specific districts?					State entry date for non-LEP students is required.
	Student	Immigrant	Number Months US Attendance	Yes	Only available for students who are new to the

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
					country.
	Student	Enrollment	School Year	Yes	
	Student	Enrollment	District Enrollment Date	Yes	
	Section	Grade	Credits Earned	Yes	
	Section	Grade	Credits Attempted	Yes	
	Section	Grade	Letter Grade	Yes	
	Section	Grade	GPA	Yes	
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Gender	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	LEP	Initial WA Placement Date	Yes	
	Student	Assessment	Proficiency Level	Yes	
	Student	Enrollment	Date entered WA	No	
1.6 What are the demographic characteristics of students in individual classrooms and how do classrooms vary?					No gap
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Gender	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	Enrollment	Program Code	Yes	
	Student	Demographic	Language Spoken at Home	Yes	
	Section	Course	Course ID	Yes	
1.8 What percentage of our students transfer in or out at specific times of the school year by subgroup and where do they go?					No gap
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Gender	Yes	
	Student	Enrollment	Program Code	Yes	
	Student	Enrollment	School Enrollment Date	Yes	
	Student	Enrollment	School Exit Date	Yes	
	Student	Enrollment	District Enrollment Date	Yes	
	Student	Enrollment	District Exit Date	Yes	
	Student	Enrollment	School Withdrawal Code	Yes	Indicates reason exited, but reason may not be known and student's new school may not be known.
	Student	Enrollment	School Year	Yes	
Program and Course Enrollment Trends					

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
2.2 How have individual district/school subgroup participation rates in advanced middle school courses changed and how do they compare to similar districts/schools?					No gap
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	Program Code	Yes	
	Student	Enrollment	County District Code	Yes	
	Student	Enrollment	District Enrollment Date	Yes	
	Student	Enrollment	School Enrollment Date	Yes	
	Student	Enrollment	Serving County District Code	Yes	
	Student	Enrollment	School Code	Yes	
	Section	Student	Start Date	Yes	
	Section	Course	Course Level	No	May be able to be derived from Section and Course ID.
	Section	Course	Course ID	Yes	
	Section	Section	Section ID	Yes	
2.3 How have individual district/school subgroup participation rates in AP, IB, SAT, and ACT exams changed and how do they compare to similar districts/schools?					No gap.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	Program Code	Yes	
	School	Indicator	AP / IB Course Code	Yes	
	Student	Enrollment	County District Code	Yes	
	Student	Enrollment	Serving County District Code	Yes	
	Student	Enrollment	School Code	Yes	
	Section	Course	Course Designation Code	Yes	
	Student	Assessment	Participation in AP, IB, SAT, ACT exams	Yes	
	School	Assessment	Assessment Administered	No	Derived from the file.
2.4/2.7 How have individual district/school subgroup participation rates in low level/remedial middle/high school courses and in elementary reading and mathematics intervention programs changed and how do they compare to similar districts/schools?					No gap
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Section	Course	Content Area Code	Yes	
	Section	Course	Course ID	Yes	
	Student	Enrollment	Program Code	Yes	
Student Achievement					
3.1 What is the grade to grade progress of student subgroups on the state assessments in reading and mathematics, i.e., what percent of students initially below proficient reach proficiency and what percent either maintain or lose proficiency over time?					No gap
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
3.2 What grade to grade progress did individual students make on the state assessment?					No gap While the review of proficiency levels can provide a profile of students, the State should consider other growth calculations.
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Identity	SSID	Yes	
	Student	Enrollment	Grade Level	Yes	
3.3 What is the grade to grade progress profile of students in specific classrooms?					No gap. While the review of proficiency levels can provide a profile of students, the State should consider other growth calculations.
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Identity	SSID	Yes	
	Student	Enrollment	Grade Level	Yes	
3.4 What is the demographic, absence, mobility, program, class grade, and course-taking profile of students who do and do not achieve?					No gap. For a richer analysis, additional program and growth data are required.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Gender	Yes	
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Student	Attendance	Cumulative Days Present	Yes	
	Student	Attendance	Num Unexcused Absence	Yes	
	Student	Enrollment	Program Code	Yes	
	Section	Course	Course ID	Yes	Assumption: Course ID is mapped to course name and course level.
	Section	Grade	Letter Grade	Yes	
	Section	Course	Course Level	No	May be derived from course ID.
	Student	Enrollment	School Enrollment Date	Yes	
	Student	Enrollment	District Enrollment Date	Yes	
	Student	Enrollment	Exit Reason Code	Yes	
	Student	Enrollment	School Exit Date	Yes	
	Student	Enrollment	District Exit Date	Yes	
	Student	Enrollment	School Entry Code	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Assessment	GX Math/LAL growth	No	Can be calculated.
3.7 How does the performance profile of high mobility students compare to other students, i.e., attendance, proficiency, graduation?					No gap. A policy decision is required to define high mobility.
	Student	Enrollment	School Enrollment Date	Yes	
	Student	Enrollment	District Enrollment Date	Yes	
	Student	Enrollment	Exit Reason Code	Yes	
	Student	Enrollment	School Exit Date	Yes	
	Student	Enrollment	District Exit Date	Yes	
	Student	Enrollment	School Entry Code	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.
	Student	Attendance	Cumulative Days Present	Yes	
	Student	Attendance	Num Unexcused Absence	Yes	
	Student	Enrollment	Expected Grad Year	Yes	
3.9 How do district/school changes in the percent of students who pass AP courses and ACT, SAT, and IB exams compare to state trends?					No gap.
	Section	Course	Course Designation Code	Yes	
	Section	Grade	Letter Grade	Yes	
	Section	Course	Course ID	Yes	
	Student	Assessment	SAT/ACT/IB exam results	Yes	
3.10 What is the high school preparation profile of students who successfully complete post secondary education?					Data related to post secondary education are required.
	Section	Course	Course Designation Code	Yes	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Section	Grade	Letter Grade	Yes	
	Section	Course	Course ID	Yes	
	Student	Enrollment	Enrolled in a Post Secondary Institution	No	
	Student	Enrollment	Post Secondary Exit Code	No	
3.11 What are the characteristics of districts/schools that meet or do not meet accountability requirements, i.e., funding, programs and course offerings, average class size, staff allocations, and teacher qualifications?					Additional funding data may be required.
	School	AYP	AYP Status	Yes	
	School	Type	REAP Alternative Funding Indicator	No	
	School	Directory	School Code	Yes	
	Section	Course	Course ID	Yes	
	Section	Section	Section ID	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	Program Code	Yes	
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Gender	Yes	
	Student	SpEd	Disability Code	Yes	
	Student	LEP	Start Date	Yes	
	Student	LEP	Exit Date	Yes	
	Staff	Demographic	Race/Ethnicity	Yes	
	Staff	Assignment	School Code	Yes	
	Staff	Assignment	Course ID	Yes	
	Staff	Credentials	Staff Type Code	Yes	
	Staff	Credentials	Certification Status	Yes	
	Staff	Credentials	HQT Certification Status	Yes	
3.12 What are the characteristics of districts/schools that show the greatest success in helping low achieving students reach proficiency?					No gap.
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	Program Code	Yes	
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Gender	Yes	
	Student	SpEd	Disability Code	Yes	
	Student	LEP	Start Date	Yes	
	Student	LEP	Exit Date	Yes	
	Student	Attendance	Cumulative Days Present	Yes	
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.
	School	AYP	AYP Status	Yes	
	School	Directory	School Code	Yes	
	Section	Course	Course ID	Yes	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Section	Section	Section ID	Yes	
	Staff	Demographic	Race/Ethnicity	Yes	
	Staff	Assignment	School Code	Yes	
	Staff	Assignment	Course ID	Yes	
	Staff	Credentials	Staff Type Code	Yes	
	Staff	Credentials	Certification Status	Yes	
	Staff	Credentials	HQT Certification Status	Yes	
3.13 What are the characteristics of districts/schools that show the greatest success in improving the performance of students in special education and ELL programs?					No gap. Recommend collecting more detailed program information.
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	Program Code	Yes	
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Gender	Yes	
	Student	SpEd	LRE Code	Yes	
	Student	SpEd	IDEA Disability Status	No	Can be derived from Disability Code
	Student	LEP	Start Date	Yes	
	Student	LEP	Exit Date	Yes	
	Student	Assessment	Assessment Achieved Standard (Alternative Assessments)	Yes	
	Student	Attendance	Cumulative Days Present	Yes	
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.
	School	AYP	AYP Status	Yes	
	School	Directory	School Code	Yes	
	Section	Course	Course ID	Yes	
	Section	Section	Section ID	Yes	
	Staff	Demographic	Race/Ethnicity	Yes	
	Staff	Assignment	School Code	Yes	
	Staff	Assignment	Course ID	Yes	
	Staff	Credentials	Staff Type Code	Yes	
	Staff	Credentials	Certification Status	Yes	
	Staff	Credentials	HQT Certification Status	Yes	
Attendance, Discipline, Dropout, and Graduation Rates					
4.1 What are the characteristics of high attendance and low attendance students by school, grade level, and subgroup?					Need data related to Title I participation type to aid in analysis.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Student	Demographic	Gender	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.
	Student	Attendance	Cumulative Days Present	Yes	
	Student	Attendance	Num Unexcused Absence	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Enrollment	School Enrollment Date	Yes	
	Student	Enrollment	District Enrollment Date	Yes	
	Student	Enrollment	Program Code	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	SpEd	Disability Code	Yes	
	Student	LEP	Start Date	Yes	
	Student	LEP	Exit Date	Yes	
	Student	Title I	Title I Participant Type	No	
4.2 How have district/school subgroup attendance patterns changed at different grade levels?					No gap.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.
	Student	Attendance	Cumulative Days Present	Yes	
	Student	Attendance	Num Unexcused Absence	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	Grade Level	Yes	
4.4 What is the distribution of dropouts over the school year by subgroup and which groups have the highest dropout rates?					No gap.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	School Exit Code	Yes	
	Student	Enrollment	School Exit Date	Yes	
4.5 What are the characteristics of students in a school who have been involved in discipline incidents, suspended, expelled, or dropped out of school?					Data related to incident/discipline data are required.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged	Yes	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
			Status		
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	School Exit Code	Yes	
	Student	Discipline	Number of Days Suspended	No	
	Student	Discipline	Number of Days Expelled	No	
	Incident	Instance	Student Unique ID	No	
	Incident	Instance	Incident Type	No	
	Incident	Instance	Type of Discipline	No	
4.6 How do increases or decreases in district/school dropout rates by subgroup compare to state dropout rates and dropout rates in similar districts/schools?					No gap.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	School Exit Code	Yes	
4.7 How do district/school NCLB graduation rates for subgroups compare to state graduation rates and graduation rates in similar districts/schools?					No gap.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	School Exit Code	Yes	
	Student	Enrollment	Grade Level	Yes	Used to determine if student is retained.
Success/Risk Indicators, and K–12 Transitions					
5.1 What is the relationship between absence and performance on state assessments for different subgroups?					No gap.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.
	Student	Attendance	Number of Days Truant	Yes	
	Student	Attendance	Number of Days in	Yes	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
			Attendance		
	Student	Attendance	Attendance Rate	No	Can be derived.
	Student	Assessment	Proficiency Level	Yes	
5.2 What is the relationship between grades and performance on state assessments?					No gap.
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	Grade Level	Yes	
	Section	Course	Letter Grade	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
5.3 What are the attendance patterns and proficiency levels of students who drop out by subgroup?					No gap.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.
	Student	Attendance	Cumulative Days Present	Yes	
	Student	Attendance	Num Unexcused Absence	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Enrollment	School Exit Code	Yes	
5.4 What were the early indicators of success or failure for students in an elementary school, i.e., what is the K–3 profile of students who either succeeded or failed?					No gap. A policy decision is required to define "success" or "failure".
	Student	Demographic	Birth Date	Yes	
	Student	Demographic	Years over age for grade	Yes	Can be derived based on Date of Birth and Grade Level.
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.
	Student	Attendance	Cumulative Days Present	Yes	
	Student	Attendance	Num Unexcused Absence	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Enrollment	Program Code	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
	Section	Grade	Letter Grade	Yes	
5.5 What are the strongest elementary school indicators of success or failure in the transition from elementary school to middle school, i.e., what is the elementary school profile of students who succeed or fail in middle school?					No gap. A policy decision is required to define "success" or "failure".

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Assessment	G3-8 Assessment Perf Level	Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Enrollment	Program Code	Yes	
	Section	Grade	Letter Grade	Yes	
	Section	Course	Course ID	Yes	
5.6 What are the strongest middle school indicators of success or failure in the transition from middle school to high school, i.e., what is the middle school profile of students who either succeeded or failed?					No gap. A policy decision is required to define "success" or "failure".
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Enrollment	Program Code	Yes	
	Section	Grade	Letter Grade	Yes	
	Section	Course	Course ID	Yes	
5.7 How are students from specific high schools performing at the post secondary level, and what are the strongest predictors of post secondary success, i.e., what is the high school profile of students who succeed at the post secondary level?					Need to collect data related to post secondary information. May be informed by National Student Clearinghouse data if available.
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Enrollment	Program Code	Yes	
	Section	Grade	Letter Grade	Yes	
	Section	Course	Course ID	Yes	
	Student	Enrollment	Enrolled in a Post Secondary Institution	No	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Student	Enrollment	Post Secondary Exit Code	No	
	Student	Assessment	SAT/ACT/IB exam results	Yes	
	Section	Grade	Post Secondary Grade	No	
	School	Type	Post Secondary Institution	No	
	Student	Enrollment	Post Secondary Entry Date	No	
	Student	Enrollment	Post Secondary Exit Date	No	
	Section	Grade	GPA	Yes	
5.8 What is the previous academic and attendance record of students in this school who are new to the district?					No gap.
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	Grade Level	Yes	
	Section	Course	Letter Grade	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Attendance	Number of Days in Membership	No	Can be derived based on school calendar.
	Student	Attendance	Cumulative Days Present	Yes	
	Student	Attendance	Num Unexcused Absence	Yes	
	Student	Enrollment	District Enrollment Date	Yes	
	Student	Enrollment	School Enrollment Date	Yes	
	Student	Enrollment	School Entry Code	Yes	
Program Outcomes					
6.1 What reading and mathematics programs/interventions have shown the most success in increasing student proficiency at the elementary, middle, and high school levels in similar districts/schools?					No gap in elements. Need a way to identify similar schools/districts.
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Enrollment	Program Code	Yes	
	Section	Section	Section ID	Yes	
	Section	Course	Course ID	Yes	
	Section	Grade	Letter Grade	Yes	
6.2 What dropout prevention programs have shown the most success in decreasing dropout rates in similar districts/schools?					Data related to dropout prevention are required.
	Student	Enrollment	Exit Reason Code	Yes	
	Student	Enrollment	Program Code	No	CEDARS collects Program Code, but it does not include dropout prevention program information.
6.3 What programs, services, and instructional models have shown the most success in improving the performance of students in special education and ELL programs in similar districts/schools?					Data related to instructional programs at the school level are required. Teacher observation data would provide a richer analysis.

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Student	Enrollment	School Code	Yes	
	Student	SpEd	Disability Code	Yes	
	Student	SpEd	LRE Code	Yes	
	Student	SpEd	Start Date	Yes	
	Student	SpEd	Exit Reason Code	Yes	
	Student	SpEd	Exit Date	Yes	
	Student	Enrollment	Program Code	Yes	
	Student	LEP	Start Date	Yes	
	Student	LEP	Exit Date	Yes	
	Student	LEP	Exit Reason Code	Yes	
	Student	LEP	Placement Test Date	Yes	
	Student	LEP	Assessed on English Language Proficiency	No	Can be derived based on Placement Test Date.
	Student	LEP	Placement Test Level Score	Yes	
	Student	LEP	Progress/Attainment in Language	No	
	Student	LEP	Primary Language Code	Yes	
	Student	LEP	Placement Test Scale Score	Yes	
	Student	LEP	Initial WA Placement Date	Yes	
	Student	LEP	Initial USA Placement Date	Yes	
	Student	Assessment	Assessment Achieved Standard (Alternative Assessments)	No	
	Section	Section	Section ID	Yes	
	Section	Course	Course ID	Yes	
	School	Type	Supplemental Services Provided	No	
	District	Directory	Instructional Model Code	Yes	Instructional model is only collected at the district level, school level will also be necessary.
	School	Directory	Other program, services, models	No	
	Staff	Credential	Staff Type Code	Yes	
	Staff	Credential	Teaching Field Authorized Area	Yes	
	Staff	Credential	Paraprofessional Qualification Status	No	
	Staff	Credential	Certification Status	Yes	
	Staff	Credential	Highest Level of Education Completed	Yes	
	Staff	Credential	HQT Certification Status	Yes	
	Staff	Credential	Teaching Credential Type	Yes	
	Staff	Credential	Technology Standards Met	No	
	Staff	Experience	Years of Prior Teaching	Yes	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
			Experience		
	Staff	Assignment	School Code	Yes	
	Staff	Assignment	Staff Category	Yes	
	Staff	Assignment	Course ID	Yes	
Teacher Workforce and Student Achievement					
7.2 What are the differences in qualifications and experiences of teachers across classrooms, i.e., is the quality of the teachers equitable across classrooms and different achievement levels?					Need to collect additional data relating to staff.
	Staff	Experience	Years of Prior Teaching Experience	Yes	
	Staff	Assignment	School Code	Yes	
	Staff	Assignment	Staff Category	Yes	
	Staff	Assignment	Course ID	Yes	
	Staff	Credential	Staff Type Code	Yes	
	Staff	Credential	Teaching Field Authorized Area	Yes	
	Staff	Credential	Paraprofessional Qualification Status	No	
	Staff	Credential	Certification Status	Yes	
	Staff	Credential	Highest Level of Education Completed	Yes	
	Staff	Credential	HQT Certification Status	Yes	
	Staff	Credential	Teaching Credential Type	Yes	
	Staff	Credential	Technology Standards Met	No	
7.5 What are the characteristics of teachers who show the greatest success in improving student achievement?					No gap. For a richer analysis, additional growth data are required.
	Student	Assessment GX Assessment Perf Level		Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Enrollment	Program Code	Yes	
	Section	Section	Section ID	Yes	
	Section	Course	Course ID	Yes	
	Section	Grade	Letter Grade	Yes	
	Staff	Demographic	Race/Ethnicity	Yes	
	Staff	Assignment	Course ID	Yes	
	Staff	Identity	Certification Number	Yes	
	Staff	Assignment	Staff Category	Yes	
	Staff	Credential	Staff Type Code	Yes	
	Staff	Credential	Teaching Credential Type	Yes	
	Staff	Experience	Years of Prior Teaching Experience	Yes	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Staff	Assignment	School Code	Yes	
7.6 What are the most common characteristics of the teacher workforce in schools that show the greatest success with students?					No gap. For a richer analysis, additional growth data are required. A policy decision is required to define "greatest success".
	Student	Assessment GX Assessment Perf Level		Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Enrollment	Program Code	Yes	
	Section	Section	Section ID	Yes	
	Section	Course	Course ID	Yes	
	Section	Grade	Letter Grade	Yes	
	Staff	Demographic	Race/Ethnicity	Yes	
	Staff	Assignment	Course ID	Yes	
	Staff	Identity	Certification Number	Yes	
	Staff	Assignment	Staff Category	Yes	
	Staff	Credential	Staff Type Code	Yes	
	Staff	Credential	Teaching Credential Type	Yes	
	Staff	Experience	Years of Prior Teaching Experience	Yes	
	Staff	Assignment	School Code	Yes	
	Staff	Certification	HQT Certification Status	Yes	
7.7 What are the characteristics of elementary classrooms, e.g., class size, student demographics, paraprofessional support, that show the greatest success in improving student proficiency?					Additional staff data needed. For a richer analysis, additional growth data are required.
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Enrollment	School Code	Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Gender	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Section	Section	Section ID	Yes	
	Section	Course	Course ID	Yes	
	Staff	Credential	Paraprofessional Qualification Status	No	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
7.8 What were the pre-service programs of teachers who have high student success rates over time?					Data related to staff are required. For a richer analysis, additional growth data are required. A policy decision is required to define "high student success".
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Enrollment	Grade Level	Yes	
	Student	Enrollment	Program Code	Yes	
	Section	Section	Section ID	Yes	
	Section	Course	Course ID	Yes	
	Section	Grade	Letter Grade	Yes	
	Staff	Assignment	Course ID	Yes	
	Staff	Identity	Certification Number	Yes	
	Staff	Assignment	Staff Category	Yes	
	Staff	Credential	Staff Type Code	Yes	
	Staff	Credential	Teaching Credential Type	Yes	
	Staff	Experience	Pre-Service Program	No	
7.10 What is the relationship between the frequency and types of professional development provided in reading and mathematics, and improvements in state assessment results?					Data related to staff and professional development are required.
	Student	Assessment	GX Assessment Perf Level	Yes	
	Student	Enrollment	Grade Level	Yes	
	Section	Section	Section ID	Yes	
	Section	Course	Course ID	Yes	
	Staff	Assignment	Course ID	Yes	
	Staff	Experience	Professional Development Course	No	
	Staff	Experience	Number of Professional Development Hours	No	
	Staff	Experience	Professional Development Course Start Date	No	
	Staff	Experience	Professional Development Course End Date	No	
Cost Effectiveness/Benefits – Return on Investment (ROI)/Cost Analyses					
8.1 What is the cost effectiveness of specific district/school programs, i.e., what are the per pupil costs (personnel and program material costs) of programs that have improved the performance of specific subgroups?					A policy decision is required to define "cost effectiveness." Program cost data are in iGrants, but is not broken down to the pupil level.
	Section	Course	Course ID	Yes	
	Section	Assignment	Section ID	Yes	
	Student	Enrollment	School Code	Yes	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
	Student	Demographic	Race/Ethnicity	Yes	
	Student	Demographic	Economic Disadvantaged Status	Yes	
	Student	SPED	Primary Disability Type	Yes	
	Student	LEP	LEP Status	Yes	
	Section	Grade	Letter Grade	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
	Staff	Assignment	School Code	Yes	
	Staff	Assignment	Course ID	Yes	
	District	Indicator	Federal Programs Offered	No	
	Staff	Assignment	Total Salary	No	
	School	Cost	Program	Yes	
	School	Cost	Classroom	No	
8.2 What are the cost benefits of federally funded supplemental programs in meeting measurable student achievement targets, i.e., what were the per pupil expenditures of these programs and what percent of students met achievement targets?					Need additional funding data.
	School	Type	School Improvement Funds Allocation	No	
	School	Type	AMAO Progress Attainment Status for LEP Students	No	
	School	Type	AMAO Proficiency Attainment Status for LEP Students	No	
	School	Type	REAP Alternative Funding Indicator	No	
	School	Type	Supplemental Services Provided	No	
	District	Indicator	Federal Programs Offered	No	
	District	Indicator	Funding Allocation Type	No	
	Section	Grade	Letter Grade	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
8.3 What are the cost benefits of professional development expenditures targeted to specific subject areas and programs, i.e., what percent of in-service teachers' students show improvements over time in the areas targeted by professional development?					Need professional development data for staff and need to be able to directly link that training to a specific course.
	Staff	Experience	Professional Development Course	No	
	Staff	Experience	Number of Professional Development Hours	No	
	Staff	Experience	Professional Development Course Start Date	No	
	Staff	Experience	Professional Development Course End Date	No	
	Staff	Experience	Cost of Professional	No	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
			Development program		
	Section	Course	Course ID	Yes	
	Section	Assignment	Section ID	Yes	
	Student	Enrollment	School Code	Yes	
	Section	Grade	Letter Grade	Yes	
	Student	Assessment	GX Assessment Perf Level	Yes	
8.4 What are the cost benefits of professional development expenditures focused on teacher retention, i.e., comparison of costs of recruiting vs. the costs of professional development?					Need data on professional development and internal processes for recruiting new staff.
	Staff	Experience	Professional Development Course	No	
	Staff	Experience	Number of Professional Development Hours	No	
	Staff	Experience	Professional Development Course Start Date	No	
	Staff	Experience	Professional Development Course End Date	No	
	Staff	Experience	Cost of Professional Development program	No	
	Staff	Assignment	Contract Beginning Date	No	
	Staff	Assignment	Term End Date	Yes	
	School	Staff	Cost of Recruitment	No	
Cost Analyses					
9.3 What is the instructional cost breakout by federal, state, and local revenues at the district, school, program, and classroom levels?					Need the cost information for each of the programs, courses by class, and schools. Cost per pupil
	Section	Section	Section ID	Yes	
	Section	Course	Course ID	Yes	
	School	Directory	School Code	Yes	
	Student	Enrollment	Program Code	Yes	
	School	Cost	Program	Yes	
	School	Cost	School	Yes	
	School	Cost	Classroom	No	
9.5 What are the cost "savings" attributable to specific management actions such as process improvements in the IT process to improve desk response capabilities?					Need to document cost and processes in place at the school and district level to be able to review costs over time.
	School	Internal Processes	Type	No	
	District	Internal Processes	Type	No	
	School	Internal	Resources	No	

Table 10. Research and Policy Questions Gaps					
Question	**Entity**	**Category**	**Attribute**	**Exists?**	**Notes**
		Processes			
	District	Internal Processes	Resources	No	
	School	Cost	Process	No	
	District	Cost	Process	No	
9.7 At the aggregate level, what is the resource consumption (personnel and non-personnel) for the major expense categories defined by the district, i.e., regular education, special education, vocational education, administration, transportation, maintenance, etc.?					Need additional staff data.
	Staff	Identity	Certification Number	Yes	
	Staff	Assignment	Staff Category	Yes	
	Staff	Assignment	Instructional Grade Level	Yes	
	Staff	Assignment	Age Group Taught (Special Education)	Yes	Can be derived.
	Staff	Assignment	Course ID	Yes	
	Staff	Assignment	Migrant Education Program Staff Category	No	
	Staff	Credential	Staff Type Code	Yes	
	Staff	Credential	Teaching Credential Type	Yes	
	Staff	Credential	Special Education Program Contracted Services	No	
	Staff	Credential	Title III/LEP Instructor Credential Type	No	
	Staff	Type	Assignment Type	Yes	
	District	Cost	Transportation	Yes	

SUMMARY RECOMMENDATIONS

The Office of Superintendent of Public Instruction has taken a number of steps towards improving and tracking student achievement, including adoption of common standards, and the recent introduction of CEDARS. With 295 school districts ranging in size from fewer than 100 students to more than 45,000 students, managing these efforts is a significant challenge.

To help manage the data requirements of the state and federal government and meet the Legislative intent for a statewide longitudinal data system, OSPI intends to leverage the CEDARS data warehouse once it is built as the primary vehicle for data collection and reporting. Although CEDARS collects a significant number of data elements across important educational domains, it is in the early stages of implementation with plans for further development as a full data warehouse.

Discussions with OSPI data managers and well as key state stakeholders interviewed through the Research and Policy Questions portion of the project revealed a consistent focus on the need and desire for the ability to collect, retrieve, and analyze quality data in order to guide instruction and improve student achievement as well as meet the reporting requirements of the state legislature and federal government. To do this will require consolidation of many of the agency's disparate data collections into a comprehensive longitudinal data system. This comprehensive data system, along with a rigorous and structured metadata documentation process, will allow for uniformity in definition, standards, and use. As mentioned, Washington has a robust student data collection system in CEDARS but no data warehouse or reporting solution. Washington is currently in the process of releasing an RFP to procure and develop the data warehouse in accordance with state requirements and the vision specified in their successful 2009 SLDS grant award.

The following table displays recommendations gathered and synthesized through the interview process and validated against the data dictionary. Please see the Washington Metadata Workbook for all identified gaps. There are six major recommendations followed by supporting significant and minor recommendations.

Table 11. Summary Recommendations

ID	Recommendation / Gap	Discussion
1	**Use the SharePoint workbook created through this project as the common data dictionary to guide development of the OSPI K-12 and ERDS P-20 SLDS data warehouses and data marts.**	**OSPI and ERDC now have a significant resource available through the metadata mapping contained in the Workbook. Both agencies would benefit from the continued development of the workbook and data roadmap.**
2	**Enable valid teacher effect calculations based on student growth percentiles.**	**Although Washington is moving ahead with plans to implement a student growth model based on the Colorado Student Growth Percentile approach, include explicit plans to link to teacher for the purpose of providing additional insights and evaluation models supported in Race to the Top.**

2.1	Calculate and load student growth percentile into CEDARS data warehouse once built	Include in data warehouse in order to expose to reporting capabilities once built.
2.2	Establish section entrance and exit for class roster in CEDARS. Class schedule by course by date.	Currently course attendance is snapshot based.
2.3	Create Current, Prior Year 1 assessment score growth.	Support longitudinal growth structure recommended by NEDM.
3	**Develop student drop-out / early warning prevention and reporting module using the ABC indicators recommended in the NGA report (Absence, Behavior, Course Grade, and Over Age for Grade)**	**Washington is examining this issue through the Building Bridges Workgroup. Incorporation of at risk factors in a state longitudinal data system offers distinct advantages over local systems for understanding risk at the state level. Washington should examine drop-out early warning systems in the context of response to intervention and positive behavior solutions to provide the necessary support for at risk students.**
3.1	Collect student and incident level discipline data through CEDARS.	This was a theme echoed consistently throughout the project in order to establish critical cross linkage of data and answer Research and Policy questions of interest.
3.2	Improve student attendance attributes to enable accurate accounting of student excused absences and school calendars.	OSPI has the foundation in place to collect count of days attended but lacks the ability to determine an excused absence. Either define excused versus unexcused absence or collect school calendar to determine attendance. Create physical database structure to allow collection of daily attendance in the future.
3.3	Extend course classification to all grades.	OSPI has intentions to “turn on validation” thus improving the use of the codes.
4	**Replace teacher certification system with one capable of collecting all required educator information including post-secondary performance and relevant major.**	**The certification system currently lacks many of the features requested via research and policy questions as well as requires error-prone manual intervention.**
4.1	Develop plans to phase out paper systems / collections: CTE, eCert, Special Education discipline, e.g.	
4.2	Data in eCertification is not connected to Certificate DB; data not directly used.	Data is manually entered twice.
4.3	Collect degree information and institution related to certification.	Significant interest was expressed in having more clear information on teacher education background
4.4	Extend system to maintain professional growth plans connecting specific course schedules and student outcomes with teacher qualifications.	Vision for system extends to include tracking a teacher’s entire history and their academic credentials including their course, continuing education, degree, certificates, endorsements, etc.

5	**Commit to a feasibility study to use CEDARS data to drive apportionment. Run multiple models approximating Apportionment FTEs with CEDARS head counts. Determine variance. Design legislative action as needed.**	**Recommend detailed studies of variance of possible funding using CEDARS as first step in determining district level differences between accounting methods.**
5.1	Washington should expand its chart of accounts for all school financial transactions and report the transaction data to OSPI for analysis and comparisons within the state data warehouse once built.	
6	**OSPI should establish a database of record for each data element in the EDFacts collections depending on the required reporting period. Those data can then be published to the data warehouse as the official record of the submission.**	**Although the CEDARS data warehouse does not yet exist, when established it should contain data snapshots for all official EDFacts reports.**
6.1	Build EDFacts data mart as part of data warehouse.	

APPENDIX

A. Excerpts from ESHB 2261

July 16, 2009

K-12 Education Data System: Legislative Expectations

Excerpt from ESSB 2261

NEW SECTION. **Sec. 202.** A new section is added to chapter 28A.300 RCW to read as follows:

Legislative Intent

(1) It is the legislature's intent to establish a comprehensive K-12 education data improvement system for financial, student, and educator data. The objective of the system is to **monitor student progress, have information on the quality of the educator workforce, monitor and analyze the costs of programs, provide for financial integrity and accountability, and have the capability to link across these various data components by student, by class, by teacher, by school, by district, and statewide.** Education data systems must be flexible and able to adapt to evolving needs for information, but there must be an objective and orderly data governance process for determining when changes are needed and how to implement them. It is the further intent of the legislature to provide independent review and evaluation of a comprehensive K-12 education data improvement system by assigning the review and monitoring responsibilities to the education data center and the legislative evaluation and accountability program committee.

Clients

(2) It is the intent that the data system specifically **service reporting requirements for teachers, parents, superintendents, school boards, the legislature, the office of the superintendent of public instruction, and the public.**

Data System Features: Legislative Intent

(3) It is the **legislature's intent** that the K-12 education data improvement system used by school districts and the state **include but not be limited to the following information and functionality**:

(a) **Comprehensive educator information**, including grade level and courses taught, building or location, program, job assignment, years of experience, the institution of higher education from which the educator obtained his or her degree, compensation, class size, mobility of class population, socioeconomic data of class, number of languages and which languages are spoken by students, general resources available for curriculum and other classroom needs, and number and type of instructional support staff in the building;

(b) The capacity to **link educator assignment information with educator certification** information such as certification number, type of certification, route to certification, certification program, and certification assessment or evaluation scores;

(c**) Common coding of secondary courses** and **major areas of study at the elementary level or standard coding of course content**;

(d) **Robust student information**, including but not limited to student characteristics, **course and program enrollment, performance on statewide and district summative and formative assessments to the extent district assessments are used, and performance on college readiness tests;**

(e) A subset of student information elements to serve as a **dropout early warning system**;

(f) The capacity to **link educator information with student information**;

(g) **A common, standardized structure for reporting the costs of programs at the school and district level** with a focus on the cost of services delivered to students;

(h) **Separate accounting of state, federal, and local revenues and costs**;

(i) Information **linking state funding formulas to school district budgeting and accounting**, including procedures:
(i) To support the **accuracy and auditing of financial data**; and
(ii) Using the **prototypical school model** for school district financial accounting reporting;

(j) The capacity to **link program cost information with student performance** information to gauge the **cost-effectiveness** of programs;

(k) **Information that is centrally accessible and updated regularly**; and

(l) An **anonymous, nonidentifiable replicated copy of data** that is updated at least quarterly, and made available to the public by the state.

District Data Systems Export Requirement

(4) It is the legislature's goal that all school districts have the capability to collect state-identified common data and **export it in a standard format** to support a statewide K-12 education data improvement system under this section.

Reports

(5) It is the legislature's intent that the K-12 education data improvement system be developed to provide the capability to make reports as required under section 203 of this act available.

Legislative Funding for New Data Elements Required

(6) It is the legislature's intent that school districts collect and report new data elements to satisfy the requirements of RCW 43.41.400, this section, and section 203 of this act, **only to the extent funds are available for this purpose.**

July 16, 2009

K-12 Education Data System: Legislative Expectations

Excerpt from ESSB 2261

NEW SECTION. **Sec. 203.** A new section is added to chapter 28A.300 RCW to read as follows:

Purpose

(1) A K-12 data governance group shall be established within the office of the superintendent of public instruction to **assist in the design and implementation of a K-12 education data improvement system for financial, student, and educator data**. It is the intent that the data system reporting specifically **serve requirements for teachers, parents, superintendents, school boards, the office of the superintendent of public instruction, the legislature, and the public. Membership**

(2) The K-12 data governance group shall include representatives of the education data center, the office of the superintendent of public instruction, the legislative evaluation and accountability program committee, the professional educator standards board, the state board of education, and school district staff, including information technology staff. Additional entities with expertise in education data may be included in the K-12 data governance group.

Duties

(3) The K-12 data governance group shall:

(a) Identify the **critical research and policy questions** that need to be addressed by the K-12 education data improvement system;

(b) Identify **reports and other information** that should be made available on the **internet** in addition to the reports identified in subsection (5) of this section;

(c) Create a **comprehensive needs requirement document** detailing the specific information and technical capacity needed by school districts and the state to meet the **legislature's expectations** for a comprehensive K-12 education data improvement system as described under section 202 of this act;

(d) Conduct a **gap analysis of current and planned information compared to the needs requirement document**, including an analysis of the strengths and limitations of an education data system and programs currently used by school districts and the state, and specifically the gap analysis must look at the extent to which the existing data can be transformed into canonical form and where existing software can be used to meet the needs requirement document;

(e) Focus on **financial and cost data** necessary to support the **new K-12 financial models and funding formulas,** including any necessary changes to school district budgeting and accounting, and on **assuring the capacity to link data across financial, student, and educator systems;** and

(f) Define the **operating rules and governance structure for K-12 data collections**, ensuring that data systems are flexible and able to adapt to evolving needs for information, within an objective and orderly data governance process for determining

when changes are needed and how to implement them. Strong consideration must be made to the current practice and cost of migration to new requirements. The operating rules should delineate the coordination, delegation, and escalation authority for data collection issues, business rules, and performance goals for each K-12 data collection system, including:

(i) Defining and maintaining standards for **privacy and confidentiality**;
(ii) Setting **data collection priorities**;
(iii) Defining and updating a **standard data dictionary**;
(iv) Ensuring data **compliance with the data dictionary**;
(v) Ensuring **data accuracy**; and
(vi) Establishing **minimum standards for school, student, financial, and teacher data systems**. Data elements may be specified "to the extent feasible" or "to the extent available" to collect more and better data sets from districts with more flexible software. Nothing in RCW 43.41.400, this section, or section 202 of this act should be construed to require that a data dictionary or reporting should be hobbled to the lowest common set. The work of the K-12 data governance group must specify which data are desirable. Districts that can meet these requirements shall report the desirable data. *Funding from the legislature must establish which subset data are absolutely required*.

Updates and oversight

(4) (a) The K-12 data governance group shall provide **updates** on its work as requested by the **education data center and the legislative evaluation and accountability program committee**.

(b) The work of the K-12 data governance group shall be periodically **reviewed and monitored** by the **educational data center and the legislative evaluation and accountability program committee.**

Reports

(5) **To the extent data is available,** the office of the superintendent of public instruction shall make the **following minimum reports available on the internet**. The reports must either be run on demand against current data, or, if a static report, must have been run against the most recent data:

(a) The **percentage of data compliance and data accuracy** by school district;

(b) The **magnitude of spending per student**, by student estimated by the following algorithm and reported as the detailed summation of the following components:

(i) An approximate, prorated fraction of each teacher or human resource element that directly serves the student. Each human resource element must be listed or accessible through online tunneling in the report;
(ii) An approximate, prorated fraction of classroom or building costs used by the student;
(iii) An approximate, prorated fraction of transportation costs used by the student; and
(iv) An approximate, prorated fraction of all other resources within the district. District-wide components should be disaggregated to the extent that it is sensible and economical;

(c) The **cost of K-12 basic education**, per student, by student, by school district, estimated by the algorithm in (b) of this subsection, and reported in the same manner as required in (b) of this subsection;

(d) The **cost of K-12 special education services per student**, by student receiving those services, by school district, estimated by the algorithm in (b) of this subsection, and reported in the same manner as required in (b) of this subsection;

(e) **Improvement on the statewide assessments** computed as both a percentage change and absolute change on a scale score metric by district, by school, and by teacher that can also be filtered by a student's length of full-time enrollment within the school district;

(f) **Number of K-12 students per classroom teacher** on a per teacher basis;

(g) **Number of K-12 classroom teachers per student** on a per student basis;

(h) **Percentage of a classroom teacher per student** on a per student basis; and

(i) **The cost of K-12 education per student** by school district sorted by federal, state, and local dollars.

Reports
(6) The superintendent of public instruction shall submit a **preliminary report** to the legislature by **November 15, 2009**, including the analyses by the K-12 data governance group under subsection (3) of this section and preliminary options for addressing identified gaps. A **final report**, including a proposed phase-in plan and preliminary cost estimates for implementation of a comprehensive data improvement system for financial, student, and educator data shall be submitted to the legislature by **September 1, 2010**.

Technical requirements for submitting data
(7) All reports and data referenced in this section, RCW 43.41.400, and section 202 of this act shall be made available in a manner consistent with the technical requirements of the legislative evaluation and accountability program committee and the education data center so that selected data can be provided to the legislature, governor, school districts, and the public.

Data Accuracy/Disclosure
(8) Reports shall contain data to the extent it is available. All reports must include documentation of which data are not available or are estimated. **Reports must not be suppressed because of poor data accuracy or completeness**. Reports may be accompanied with documentation to inform the reader of why some data are missing or inaccurate or estimated.

B. List of Interviewees

Office	Name	Meeting (PST)
Digital Learning	Karl Nelson	3/26/10 9:00 AM
Special Programs and Federal Accountability	Mary Jo Johnson	3/30/10 9:00 AM
Child Nutrition	George Sneller	3/30/10 1:00 PM
Highly Capable Programs and Advanced Placement	Kristina Johnstone	3/31/10 10:00 AM
Title I Learning Assistance Programs, Consolidated Program Reviews	Gayle Pauley	3/31/10 10:00 AM
Special Education	Sandy Grummick	4/6/10 9:00 AM
Information Technology Services	Terri Baker	4/6/10 1:00 PM
Information Technology Services	Cynthia McCroy	4/19/10 10:00 AM
Career and Technical Education	Phouang Hamilton	4/19/10 11:00 AM
Career and Technical Education	Betty Klattenholff	4/19/10 11:00 AM
Learning and Teaching Support	Jeff Soder	4/21/10 9:30 AM
Student Support	Martin Mueller	4/28/10 10:00 AM
Professional Certification	Laura Gooding	4/29/10 9:00 AM
Professional Certification	Rebecca Jenkins	4/29/10 9:00 AM
Student Transportation	Allan Jones	4/29/10 12:00 PM
Center for Improvement Student Learning (CISL)	Rudi Bertschi	4/29/10 1:00 PM
Special Programs and Federal Accountability	Bob Harmon	4/30/10 11:00 AM
Federal Programs and Accountability	Anne Renschler	4/30/10 12:00 PM
School Facilities and Organization	Gordon Beck	4/30/10 1:30 PM
School Facilities and Organization	Angie Wirkkala	4/30/10 1:30 PM
School Facilities and Organization	Brenda Hetland	4/30/10 1:30 PM
Professional Certification	David Kinnunen	5/3/10 11:00 AM
Customer Support	Geri Walker	5/5/10 1:00 PM
Customer Support	Emily Brown	5/5/10 1:00 PM
Customer Support	Micah Ellison	5/5/10 1:00 PM
Financial Services	Cal Brodie	5/13/10 8:00 AM
Bilingual Migrant Education	Paul McCold	5/13/10 9:00 AM
Bilingual Migrant Education	Helen Malagon	5/13/10 9:00 AM
Teaching and Learning	Jessica Vavrus	5/13/10 1:00 PM
Assessment and Student Information	Robin Munson	5/17/10 8:00 AM
Assessment and Student Information	Sheri Dunster	5/17/10 8:00 AM
OFM – Education Research and Data Center	Deb Came	5/25/10 1:00 PM
OFM – Education Research and Data Center	Michael Gass	5/25/10 1:00 PM
School and District Improvement	Janell Newman	6/10/10 11:30 AM

C. Data System Gap Analysis Project Description

ABOUT THIS PROJECT

The Washington Legislature established the K-12 Data Governance Group within OSPI for the purpose of assisting in the design and implementation of a K-12 education data improvement system for student, financial, and educator data. The Data Governance Group's tasks include:

- Identify critical research and policy questions;
- Identify reports and other information that should be made available on the internet;
- Create a comprehensive needs requirement document;
- Conduct a data system gap analysis;
- Focus on the financial and cost data that is necessary to support the new K-12 financial models and funding formulas; and
- Define the operating rules and governance structure for K-12 data collections.

The K-12 Data Governance group has, in turn, contracted with PCG Education to assist in performing a data system gap analysis that analyzes the current status of OSPI data systems compared to the Legislature's intent. PCG Education will use this information in conjunction with a prioritized list of research and policy questions that the state data system should address to determine what data should be included in the state data system.

Context for Interview

The identification of a data gap, between data desired and data collected, ultimately occurs at the "element" level. While several systems may collect the same item, grade level for instance, a list of data elements is the non-duplicated list of all those collected items. The primary purpose of the interview is to collect and validate the information necessary for identifying and documenting the normative list of data elements necessary for identifying data gaps. The types of questions you can expect include:

1) What system houses the data that your department collects?
2) What are the detail level elements that are collected in the system?
3) Are these elements collected at a student level or aggregated by school or district?
4) How often is this data collected?
5) At what level is the data collected (e.g., district, school)?
6) What reports/outputs are generated from this system?
7) Are there any statistics that you currently pull and publish?
8) Is this system linked to any others?

D. Inventory of Existing Data Sources

Entity/Level	Office / Business Function	System	Sub-System
Student	Accountability	Alternative Learning Experience	
School	Enrollment	P105 / October 1 Enrollment Report	
School	Accountability	P105B	
School	Accountability	Private Ed Approval	
School	Accountability	Private Participation in Federal Programs	
Staff	Accountability	Teacher Quality Data Collection	
District	Assessment	AYP Preview	
Student	Assessment	CAA/CIA Database (Exit / Exam status)	
Student	Assessment	Contrasting Groups Study	
Student	Assessment	Promoting Academic Success (PAS)	
Student	Assessment	Washington Assessment Management System (WAMS)	
Student	Assessment	Washington Query	
School/District/State	Assessment	Washington State Report Card	
Staff	Assessment	WASL Math Range Finding	
Student	Assessment	Test Registration (OPT)	
Staff	Assessment	Test Scoring Application	
Student	Bilingual LEP	Migrant Student Data and Recruitment (MSDR)	
Staff	Certification	Electronic Certification	
School/District	Child Nutrition	CNP2000	
Student	Child Nutrition	Direct Certification Free Lunch	
Student	Child Nutrition	Direct Verification	
Location	Child Nutrition	Summer Food Site Listing	
District	Career and Technical Education	Career and Technical Education	
School/District	Career and Technical Education	Grad and Teen Parent	Spreadsheet
Public School	Career and Technical Education	iGrants	Annual Agricultural Education Program Report

School District	Career and Technical Education	iGrants	Perkins End of Year Report
School	Digital Learning Department	Multi-district Online Provider Application	
Student	Digital Learning Department	Online Course Registration System	
School/District	Digital Learning Department	School / People Database	
School/District	Digital Learning Department	School sign-up system	
School/District	Directory	Education Data System	
Staff	District and School Improvement	National Board for Professional Teaching Standards (NBPTS) Scholarship	
School/District	Ed Tech	Tech Survey	
District	Financial Services	Apportionment System	
School?	Financial Services	Apportionment System	School District Revenue Projections (F-203 and F-203X)
Staff	Financial Services	Apportionment System	Personnel reporting (S-275)
District	Financial Services	Apportionment System	Student Enrollment (P-223)
District	Financial Services	Apportionment System	Budgeting (F-195)
District	Financial Services	Apportionment System	Budget Revisions (F-200)
District	Financial Services	Apportionment System	Year End Financial (F-196)
District	Financial Services	Apportionment System	County Treasurer's Report (F-197)
District	Financial Services	Grants Claim System	
District	Financial Services	I728 Report	
District	Financial Services	SAFS	
	Highly Qualified Teachers		
Academic Standards	Learning And Teaching Support	EALRS	
Academic Standards	Learning And Teaching Support	EALRS Management	
Staff Development Meeting	Professional Development	Events Manager	
Staff	Professional Practices	Statewide Fingerprint-based Criminal Background Check (FMS)	

ESD	Safe and Drug Free Schools	iGrants	Title IV Safe Consort
School District	Safe and Drug Free Schools	iGrants	Title IV Safe District
District	Safe and Drug Free Schools	Safe and Drug Free Schools and Communities	Principles of Effectiveness
District	Safe and Drug Free Schools	Safe and Drug Free Schools and Communities	
Student	Special Programs	Honors Award Nomination	
Student	Student Information	CEDARS	CEDARS - Comprehensive Education Data And Research System
Student	Student Information	Core Student Record System (CSRS)	
Student	Student Information	Core Student Record System (CSRS)	P210 – End of Year Enrollment Status
Student	Student Information	Home Based Report	
District	Student Information	Homeless Children and Youth Data Collection Form	
School	Student Information, School Safety Centers	Attendance and Weapons	
Student	Student Services	Student Learning Plan	
Staff	Student Transportation	Bus Driver Authorization	
District	Student Transportation	Operations Allocation System	
District	Student Transportation	School Bus Information System	School Bus Depreciation
District	Student Transportation	School Bus Information System	School Bus Inventory
Staff / District / ESD	Student Transportation	Traffic Safety Education Program Approval	
School	Tech Ed	School Improvement Planning Tool	
District		Healthy Youth Survey	
Multiple	**Multiple**	iGrants	174 form packages