

Office of the
State Department
of Education

**Public
School Information**

**2010
Legislative
Report**

Idaho Statewide Longitudinal Data System

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Idaho Statewide Longitudinal Data System

BACKGROUND

As of November 2009, Idaho remains one of the last states to implement a statewide longitudinal data systems (SLDS). According to an annual survey conducted by the Data Quality Campaign, Idaho employs only one of the ten essential elements. However, even though Idaho has lagged behind other states, we have made significant strides in a short amount of time and learned from other states throughout the process.

Currently, without a fully implemented SLDS, Idaho lacks the ability to use longitudinal data to support educational improvement efforts, resulting in a lack of data to make solid, informed decisions regarding the educational programs and processes. The State Department of Education is developing a K-12 data warehouse, utilizing funds received from an IES grant #84.372A for \$5.9M and the Legislature's allocation of \$2.5M. The project team determined that the necessary steps include identifying the crucial common data elements, with a common data governance process; to build a transactional data warehouse to accommodate the data collections and develop best-practices and secure processes for extracting the data required from the various districts. The projects to complete the steps are well underway. The same effort will be expanded to incorporate the limited amount of pre-kindergarten data available statewide, through workforce, resulting in a PK-workforce database.

OVERVIEW

Uniquely, Idaho is in the process of designing its Statewide Longitudinal Data System (SLDS) in such a manner that it will not only provide data to decision makers at the state and district levels but will also provide a toolset for educators and stakeholders at all levels, including in the classroom. The system will help educators and administrators become more capable, effective, and efficient in their endeavors to teach and mentor the students of Idaho. The students will have the opportunity to learn about and use the tools needed for the development of next generation innovators. The same students, if provided the necessary education and opportunity will create the tools of the future. Related to this is the concept that our definition of educators and students is broad. A parent teaching a child or a senior teacher instructing a new school employee falls within our educator/student paradigm. Students and teachers alike must work together to understand and embrace the critical and collaborative skills necessary for the 21st century. The state's commitment to data and usage of the data provide a solid "instructional core", coupled with the supporting analytics designated to supporting the instructional core are paramount in affecting change within our educational system.

Key to our concept of educational improvement is "levels of focus". We are intent on providing educators with the appropriate level of focus. A district administrator needs a very different level of focus than a parent or guardian. Our SLDS is designed to collect data at the most granular level and provide reporting capabilities that will provide granular to summary information at whatever focus level the educator needs and is authorized to use. For example, an administrator needs to know how many student are in need of free or reduced lunch in order to

create a resource plan. A teacher needs to know what each individual student does or does not know in order to create a student's educational progress plan. We believe giving educators a tool that provides them with accurate and timely data at the right focus level will enable them to improve their efficiency and effectiveness. In the same vein, allow the students to use the tools with which they communicate and network, to educate. The State Department of Education's function is to supplement and reinforce the student's modality of learning.

The Department received \$2.5 million from the Legislature and \$5.9 million from the U.S. Department of Education through the American Recovery and Reinvestment Act of 2009 (ARRA) Grant program to design and build a SLDS. In support of Superintendent Luna's vision, the Department continues to design and build a system that perpetuates the ideal of building on an individual student's strengths. All educators, families, communities and the workforce will benefit by having data to enable the preparing of each student for competing within a world economy.

The Department is currently working on several initiatives for the implementation of the tools to improve the efficiency and effectiveness of our educational system. The tools are key components of the Statewide Longitudinal Data Systems. The project includes creating an open architecture/modular platform, portal & directory and database that will allow for any number of programs, applications and tools to link into the system. The current funding is being invested in the base platform, hardware, software and application design to provide an integrated, highly functioning longitudinal data system for use statewide. The architecture is based on the data-driven decision making for education enterprise data management systems.

To continue the current projects and enhance the ability to collect data not only from K-12, but to expand the collections from PK-Workforce, the State Department of Education, in conjunction with the State Board of Education, submitted an additional ARRA fund grant in November 2009 for \$20M. This new expansive grant allocates for funds which would provide monies to purchase a statewide learning management system as well as other expansion activities.

MILESTONES

Infrastructure

To ensure a solid infrastructure, the State Department recently made a significant investment in hardware, software and upgrades to the network. The investment included the purchase of sixteen HP blade servers and the necessary switches, routers and other hardware to allow optimal operation of each server. The servers are installed and running VM Ware to create a robust virtual environment to run the new programs and applications. Software upgrades include the latest version of VM Ware for the greatest flexibility, back-up software applications, anti-virus detection software, as well as other more minor applications. The configuration of the network has been modified to accommodate the expanding needs of the Department and includes, but is not limited to the addition of a virtual private networks (VPN) design, setting up and reconfiguring the DMZ and firewall and other necessary changes to allow outside applications to be remotely administered and monitored.

Portal and Directory

The design of the Portal supports the secure, scalable and extensible requirements for managing the integrated applications and content. The extent of the flexibility of the system will have the capacity for externally maintained applications. The portal will be a way to deliver many disparate application to the appropriate users via a single platform, single sign-on. The portal is designed to accommodate the ever widening array of devices used by people to access the internet and accessible through multiple devices. The devices range from computers running a variety of web browser, Firefox, Mozilla and IE for example to small screen devices, including smart phones and other web enabled portable, non-computer hardware.

The beta of the enterprise portal and directory will be rolled out to pilot school districts during 2009-2010 school year. This will provide the infrastructure and entry point within which the data collection applications can be deployed. A federated directory system will manage the authentication and authorization of users of these applications providing single sign-on. A centralized and uniform security model, at the object level, that meets the data access, privacy, and security policies can be applied to all agency applications. User management of district and charter school staff can be delegated to a security officer within each district and charter school.

The State Department of Education has expanding and evolving needs to serve its many constituencies from the Department employees, researchers, district employees, staff faculty, students, parents, etc. The needs are multiplied by the sheer number of users requiring access to student's performance information as well as additional data and services. The state is designing a system to meet the present and future needs. The goal is to make educational information and related applications, modules and tools available to a wide variety of users. The vision includes the creation of a comprehensive environment to provide users access to education data, resources, and other relevant functionality. This requires the careful control of access to information and facilities to protect student information and student safety. To successfully allow access while protecting the data from access by unauthorized sources, the Department is establishing an environment that will support both authentication and authorization in a consistent and manageable way. To accomplish this, a process of establishing the identity of each of the various users and assigning them the appropriate access to resources. A web based platform has been created and will permit interaction to the system and integration with the various applications, modules, and tools. The platform supports the management of multiple applications and is basically agnostic to the type of application, module or tool, not limiting the ability to connect to the system. Designing the platform is such a way it enables efficient management of the content and is highly extensible. The Enterprise portal will provide a platform capable of delivering present and future initiatives and services. Current initiatives focus primarily on the distribution and management of content as well as the integration of existing Department applications. Later this year, the expansion will include enhanced content management functionality, integration with a wider array of applications, such as a Learning Management System, and the IEN content as well as other learning communities.

Data Collection

The State Department of Education is currently redesigning the method of data collection to encompass individual-level data. Several school districts have participated in the initial pilot of student-level data. The Department will continue working directly with Idaho school districts to

pilot and test each phase and element of the new data collection system. The main goal is to ensure ease of use, adoption rate and most of all, the ability to collect meaningful data and pass this data back to the schools for impact in the classroom. As we work with the pilot districts on the new data collection, portal & directory, unique student and teacher identification systems, we will make the necessary modifications to roll-out an efficient and effective statewide system that provides useful data to all users. It will provide the tools and information necessary for Idaho educators and policymakers to make better-informed decisions about how best to improve Idaho's public education system at the classroom, school, district and state levels in the future.

Components of the current data collection redesign project include:

The development of a data dictionary is in progress as well as the necessary metadata components to support the data dictionary and overall data governance policies. The majorities of the core data collections of the agency are documented, with data ownership identified, and item definitions aligning with those of the NCES handbooks.

A major project is in progress which entails the redesign of various core applications that are currently implemented in Visual FoxPro. This project is slated for completion in calendar year 2010. Components of this project include the redesign of attendance and enrollment collection as a unit record level collection. This collection gathers pertinent data on student attendance and enrollment, drop-outs and graduate (3, 4 & 5 year cohorts). By moving to student-level data collected multiple times during the school year, timeliness and data quality will be dramatically improved. A collection of the courses and corresponding course codes are defined. This allows the alignment of students which are enrolled and the teachers of those courses to track through the system.

The collection of data on teachers is also currently being redesigned. The redesign will greatly improve the ability to collect data and utilize for tracking the qualifications, experience, assignments, and background for all employees of Idaho School Districts. The information is critical for the protection of Idaho's student from exposure to unqualified instructors and criminals. The State Department implemented in August of 2009 a new "LiveScan" system for electronic fingerprinting and background checks on all school district employees. The increased efficiency to process the background checks and records expedites the process and reduces the likelihood of unqualified individuals gaining exposure to Idaho students. Since Teacher Certification data is instrumental in the ultimate success of the Idaho's students, a major component of the state's school funding is tied to the information. Not only is the Department interested in solely collecting data, it is driving for a re-engineering of the underlying business processes and coordinating such efforts across program areas. Additionally the State is redesigning the teacher data collection application, as well as several other applications, enabling all applications to collect data at the person level. The other applications in the redesign process are:

- The collection of data on students receiving Special Education;
- The collection of data for Special Education Complaints;
- A collection of student courses allowing the matching of teachers to their students;
- Staffing
- Transportation
- Alternative assessments
- Student Attendance and Enrollment;

- The entire Idaho Basic Education Data System – IBEDS

Each of the specific application areas have been analyzed with independent scope and requirements documented to ensure a robust application is designed. The data from each of the applications will be used by many program areas and other applications. This provides the necessary foundation for the entire system as we build out a highly effective, robust longitudinal data system. The system will be a two-way communication system, not just a data collection and reporting repository, but a system which enables the data to be pushed back into the classroom for individual student improvement.

To guarantee the Department's compliance to state policies and privacy protection, an independent consultant will review the state statutes, rules and regulations, as well as the State Department policy guidance making recommendations to the state. The recommendations from the findings will be used to strengthen the policies on data governance and implementation as the state moves to the collection of unit records. The data access, privacy, and security policies are being documented and insure compliance with FERPA and the Idaho Public Records Act.

The move to the collection of unit record data will lead to an improvement in data quality – and increase in the ability of the state to audit the data it receives.

Each of the applications that the Department is designing and/or re-writing, have a detailed project plan that is being strictly adhered to. Included in the project plan for each element is a comprehensive test plan with use cases have been clearly defined. Acceptance testing is a critical component to the implementation of each project component. Working directly with the various program managers, and areas within the Department as well as the districts throughout the state to ensure their acceptance and adoption will define the ultimate success of the overall Statewide Longitudinal Data System Program. Communication with the various stakeholders began early in the process and will continue through each phase as we roll out beta versions and gather comments for refinement of the project.

Data Warehouse

Idaho is taking a somewhat unique approach to the data collection process, ensuring it is at the “person” level, not just a student level or teacher level in its core database. The database will contain the necessary information to match students with teacher and with the instruction programs. The transactional data warehouse will provide the infrastructure for a strongly constructed relational data warehouse. The warehouse will provide the mechanism to extract the data and run the required reports to understand and use the data to positively influence the educational experience. This approach will provide a more complete record of a person, as they enter the system at pre-school age to successes in the workforce. The data warehouse is being designed to accommodate the vastly expanding elements that should be collected for the persons within the system, including the student, teachers, administrators, volunteers, parents and all other persons involved in the education of Idaho's youth. In order to create the ability to track a person and subsequent data on each person, the Department realized the need for a robust Unique Person Identification System be developed and deployed. The cornerstone of the data warehouse system is the Education Unique ID system.

Education Unique Identification

In December 2009, the State Department of Education rolled out an enhanced Education Unique Identification system. The new system is an enhanced version of the previously released Unique Student ID system (<https://apps.sde.idaho.gov/EDUID>). In accordance with the educator/student paradigm described earlier, association of points of data to individuals, not just traditionally defined students, is essential. Idaho is uniquely identifying students, teachers, administrators, volunteers and all other persons that are involved with Idaho education and for which we are collecting data. For example, teacher credentials and student summative testing data are both essential components of a comprehensive SLDS and require unique identification in order to associate the correct data to the individual.

Basic to an education unique identification system is the concept of comparing incoming information with established data contained in a database with the three resulting outcomes described below:

1. If a submitted record is sufficiently like a record already in the database with a given degree of certainty, a match is made and the unique identifier is returned to the submitting system.
2. If a submitted record is sufficiently like a record or multiple records already in the database, but the degree of certainty is low enough to question the match, then manual intervention is required to determine if the match to an existing record should be made or a new record and identifier should be created. Once the determination is made, the associated identifier is sent to the submitting system.
3. If a submitted record is NOT sufficiently like a record already in the database, a new record and identifier is created and the identifier is sent back to the submitting system.

The EDUID system relies on a primary and secondary set of data to determine if the submitted record is a match to an existing record. The primary comparison data is:

- Name – First, Middle, Last, Suffix, and combinations of name fields in order to evaluate level of certainty (Aliases and AKAs are secondary data).
- Gender
- Date of birth

The secondary data is not displayed to the user of the system; however, it is used within the system to provide additional points for confirmation of matches.

If uploading a batch, occasionally a file may contain a name that results in multiple matches to existing names and EDUIDs which must be resolved by the user before the batch process is completed. In this case the file will be put in a status of “reconciling” and the user will need to resolve the multiple matches before the file processing can be completed. There may be times where a match is made in error. The system is designed to accommodate for this by splitting or merging a record. Splitting a record is accomplished by keeping data and identifier for one person and creating a record with a new identifier for the person that was previously matched in error. Merging a record can be accomplished if it is determined that the same person was issued

more than one EDUID. This can happen if names are spelled incorrectly, a birth date is entered incorrectly or a person had a name change.

The EDUID system is built as a service. Data is submitted as a batch of records or as an individual record. A website is also provided as a user interface to allow authorized users to retrieve identifiers. The system is protected using a complex security scheme and will only present back an identifier for a submitted record. The system will not present the user with other personally identifiable information.

KEY INITIATIVES FOR 2011

Goals:

- Provide historical district, school, student and staff information to program offices
- Complete the design of numerous new applications and modify existing applications to accommodate the person level data necessary to longitudinal data.
- Link student and staff data across time and program.
- Provide safe and secure access to data from schools and districts.
- Provide appropriate historical assessment data to teachers and staff.
- Integrate data access and utilities in enterprise portal.
- Reduce impacts of high mobility through support for efficient and complete transfer of education records.
- Align K-12 data systems with higher education.
- Provide the data systems and infrastructure to facilitate analysis and research to improve academic achievement and close achievement gaps.

Key Initiative Elements:

- Statewide roll-out and adoption of Education Unique Identification System.
- Continue to communicate all the data element and reporting changes statewide
- Complete the implementation of the transactional core and contingent databases.
- Build and implement a robust data warehouse capable of detailed reporting and analyst, both standardized reports and ad-hoc reports
- Ensure all reports have proper security built in and only authorized stakeholders, at the appropriate level, have access to the information.
- Build and/or procure necessary Business Intelligence tools to easily supply pertinent data back to the various stakeholders.
- Data governance and quality assurance program is designed and in place.

Timeline:

SDE is currently initiating the following projects in support of SLDS:

- Run a statewide trial in spring 2010 for data collection at Student level
- Complete the rewrite and enhancement of the current IBEDS applications - 2010
- Implement single sign-on authorization and authentication for all applications – March 2010
- Release Request for Information (RFI) for Reporting & Analyst tools January 2010.
- Statewide roll-out of portal & directory – February 2010

- Roll-out EDUID for all staff members involved in education – March 2010
- Data collections for fall of 2010 and spring 2011 will include all student level information, not just aggregate
- Data governance and metadata documented and shared with pertinent stakeholder – Spring 2010
- Funding calculations based on student level and staff level data – February 2011

FY2011 BUDGET REQUEST

In FY2009, the State Department of Education was appropriated \$2.5 million to begin the work on the SLDS. The appropriation provided \$80,000 in personnel (for an I.T. Project Manager) and the balance in operating. This appropriation was all one-time. In FY2010, Department was appropriated \$80,000 one-time for the continuation of the personnel cost provided in FY2009.

- This request includes \$80,000 in ongoing personnel funds to continue this support for an I.T. Project Manager.
- In 2008, Superintendent Luna laid out a plan for an SLDS that included \$1.8 M in ongoing support annually. This request includes \$120,000 for the first year of the ongoing SLDS operating costs, including software licenses and maintenance.

The Department is committed to continuing the efforts and building on the momentum generated to this point. We are keenly aware of current budget limitations facing the state. However, the full development and implementation of the statewide longitudinal data system in Idaho is one of the four assurances the state was required to commit to in accepting federal stimulus funds through the American Recovery and Reinvestment Act of 2009. Therefore, we are committed to carrying out this project and implementing it in every Idaho school and district statewide.