Supporting the ARRA-RFA Grant Program

Introduction

On July 24th, The Institute of Education Sciences (IES) invited State Educational Agencies (SEAs) to apply for grants to design, develop, and implement statewide P-20 longitudinal data systems (LDS) to capture student data from preschool to high school, college, and career.

Over the last few years, we have worked with a number of our SEA customers in their P-20 LDS initiatives. Through these projects we have learned a great deal about what it takes to design and implement a P-20 longitudinal data system. We have also had the opportunity to understand what we need to do to extend our eScholar Complete Data Warehouse® product(s) to meet the requirements of a P-20 LDS.

This Solutions Brief is intended to assist SEAs in moving forward with their application initiatives. In this Brief we have outlined the key elements of the grant program; the seven key capabilities of a Longitudinal Data System required by the IES for the SEA to be funded; and the twelve elements for a Longitudinal Data System as prescribed by the America COMPETES Act. We have also indicated how the eScholar products support both the key capabilities and the twelve elements.

Based on our experience working with statewide data warehouse and student and staff identification system implementations, we are in a unique position to assist SEAs not only in their application process but more importantly work with them to put in place a P-20 LDS that will meet the requirements and goals as outlined in the 2009 ARRA RFA.

Purpose of the Grants

The purpose of grants under this program is to enable SEAs to design, develop, and implement statewide, longitudinal data systems to efficiently and accurately manage, analyze, disaggregate, and use individual student data.

The long-term goal of the program is to enable all States to create comprehensive P-20 systems that permit the generation and use of accurate and timely data, support analysis and informed decision-making at all levels of the education system, increase the efficiency with which data may be analyzed to support the continuous improvement of education services and outcomes, facilitate research to improve student academic achievement and close achievement gaps, support education accountability systems, and

simplify the processes used by State educational agencies to make education data transparent through Federal and public reporting.

Grants are intended to help States accelerate the development of their longitudinal data systems, to support the inclusion of education data from preschool through postsecondary and workforce information, including employment, wage, and earnings data, and to promote linkages with other data systems where such linkages may inform policy and practice. Longitudinal data can be used, among other purposes, to identify early childhood programs that are associated with strong school readiness outcomes for children, assess student progress and learning needs, improve instruction, identify successful instructional programs within the State, and determine priorities for allocating resources. These data also help policymakers and educators devise methods for identifying effective teachers and teaching practices, and strong teacher preparation programs. They can be used to identify programs and pathways that encourage students to stay in school, re-enter school, and enter postsecondary education, and they are a means to determine whether high school graduates have the knowledge and skills to succeed in postsecondary education and the workforce without the need for remediation, strengthen the preparation of all students for success after high school, provide accurate information about schools, school staff, and the progress of students, and support accountability and public reporting.

STATEWIDE LONGITUDINAL DATA SYSTEM REQUIREMENTS

Any statewide, longitudinal data system to be supported with funds made available pursuant to the 2009 ARRA-RFA competition must meet the requirements described below, which include certain system capabilities, the elements prescribed by the America COMPETES Act, and other requirements.

Required Data System Capabilities. A statewide, longitudinal data system developed with funding obtained pursuant to this grant competition **must have the following seven capabilities**. Outlined with each element is a brief description of the ways that eScholar products support the capability.

1. *The system must include data at the individual student level from preschool through postsecondary education and into the workforce (e.g., employment, wage, and earnings information).*

   The eScholar Complete Data Warehouse (CDW) is built on an extensible data model which contains over 2,500 data elements across more than 30 data categories. The data model allows SEAs to maintain detailed data for individual students throughout their education – from pre-school through post-secondary and into their workforce experience. The CDW solution includes almost 200 student attributes including gender, race/ethnicity, economic status, address, contact

and guardian information, primary language, challenges, LEP participation, and weighted and un-weighted GPA. CDW provides the capability to store a rich set of course and grade related data and tie it to a student's record for reference and analysis throughout a student's career. Additionally, a wide variety of data on special education can be tracked longitudinally including a student's level of and changes in participation in one or more special education services. CDW includes a data category - Career & Technical Education - designed to facilitate tracking of data related to the Carl D. Perkins Vocational and Technical Education Act of 2006 (Perkins IV) and eScholar Uniq-ID® for Students enables this data to be linked with specific students.

2. *The system must facilitate and enable the exchange of data among agencies and institutions within the State and between States and should support interoperability by using standard data structures, data formats, and data definitions to ensure linkage and connectivity among the various levels and types of data.*

CDW All eScholar data warehouse and unique identifier products have the same underlying data models and data definitions and are built on an open architecture to facilitate interoperability using education and technology industry data and data exchange standards. eScholar as an organization has been very involved in the development of education data standards through the National Center for Education Statistics (NCES) and the development of seamless interoperability through the Schools Interoperability Framework (SIF), including the incorporation of Web Services technology to facilitate more efficient and effective data exchange. Additionally, eScholar is working with our SEA customers to develop eScholar interstate capabilities for maintaining identities of students and continuing to collect a contiguous record of their data, as they move between states.

3. *The system must link student data with teachers, i.e., it must enable the matching of teachers and students so that a given student may be matched with the particular teachers primarily responsible for providing instruction in various subjects.*

The combination of CDW and eScholar Uniq-ID® products enables SEAs to link class-specific student data such as grades, course enrollment and attendance with class instructors at a specific point in time rather than just at the school year level. This capability allows SEAs to analyze course instructor information in the context of student grades, student course

enrollment, and student course attendance and to be able to conduct these analyses on a longitudinal basis.

4. *The system must enable the matching of teachers with information about their certification and teacher preparation programs, including the institutions at which teachers received their training.*

The Staff Demographics component of the CDW provides the ability to capture more than 90 attributes on staff. Mappings to the US Department of Education's (USDE) NCES defined data elements are included. Snapshots of staff demographics can be taken at crucial points to capture staff composition at that point. This feature provides the ability to understand differences in the make-up of the staff at different points during a school year. Professional development activities including the entry date, completion date, number of activity hours and progress being made toward objectives can be tracked in this domain. The Staff Certification data collected in CDW and eScholar Uniq-ID products can assist a school district in addressing the 'No Child Left Behind' requirement for highly qualified teachers (HQT).

5. *The system must enable data to be easily generated for continuous improvement and decision-making, including timely reporting to parents, teachers, and school leaders on the achievement of their students.*

A key element in facilitating continuous improvement is the creation of usable reports and analysis based on high quality data. The CDW provides the full range of capabilities required to ensure the integrity and quality of data and is designed to allow any SQL compliant reporting or analytical tool to operate with the data model (and underlying data).

6. *The system must ensure the quality and integrity of data contained in the system.*

Ensuring data quality is a key focus of the CDW. The system allows an administrator to configure data loading and data quality rules specific to each collection, including the ability to control which users can upload what data, which elements are required for each collection, as well as how data should be transformed during each collection, and which data quality issues will result in rejection of specific data rows. Packaged data transformation and load routines automatically validate data integrity and prevent duplicate and orphan records from corrupting warehouse data. Data rows that are rejected by the system are presented in error logs that clearly identify the data row(s) and column(s) in error and are organized by error type.

7. *The system must provide the State with the ability to meet reporting requirements of USDE, especially reporting progress on the metrics established for the State Fiscal Stabilization Fund and the reporting requirements included in the EDFacts data collection and reporting system.*

The CDW solution provides the ability to capture all the relevant data for EDEN submissions. The eScholar EDEN Solution™ includes processes to extract the data from the CDW and load the data into the eScholar EDEN Data Mart. Once loaded to the EDEN data mart the data can be analyzed and verified before using eScholar processes to extract the data into EDEN-formatted files ready for submission through the EDFacts portal. eScholar has developed processes for compiling EDEN-required data from the comprehensive and granular data collected and stored in the CDW. Data residing in the CDW is extracted, aggregated as necessary, and loaded into EDEN staging tables (the EDEN data mart) for easy review by State Education Agency Program Offices. Once the data is reviewed, eScholar EDEN processes are used to apply the final EDEN formatting rules and file naming conventions and create files ready for submission to USED. Since the EDEN file specifications are subject to change from year to year, eScholar reviews the file specification each year and publishes an updated eScholar EDEN User Guide as required to map the LDS data elements to the EDEN requirements and eScholar updates the business rules built into its EDEN file submission solution to stay in compliance with changing USED requirements. These eScholar updates are provided as part of the regular maintenance and support contract. eScholar provides comprehensive documentation on eScholar EDEN processes. This includes all data mapping for the 2006-2007 and 2007-2008 EDEN file specifications, EDEN valid values and business rules, and processes for populating the EDEN Data Mart and producing EDEN-formatted files. All software updates that result from changes to EDEN requirements are documented. The eScholar EDEN solution includes processes that apply the EDEN formatting rules and file naming conventions and the creation of files that can be successfully submitted to USED. Any software updates resulting from updated federal requirements can be easily installed and applied.

Required Data System Elements. A data system developed with funding obtained pursuant to this grant competition **must include at least these 12 elements** prescribed by the America COMPETES Act. Outlined with each element is a brief description of the ways that eScholar products support the specific element.

With respect to preschool through grade 12 education and postsecondary education:

1. *A unique statewide student identifier that does not permit a student to be individually identified by users of the system (except as allowed by Federal and State law).*

   The eScholar Uniq-ID® for Students system which is a component of the eScholar P-20 LDS solution assigns a unique numeric identifier to each student. The identifiers are randomly assigned; they are never duplicated nor constructed based on any algorithm related to the student identification attributes. The system utilizes student directory information (First Name, Last Name, Date of Birth, etc) for matching. Since these student attributes are often similar to those of other students, the system will provide a list of registered students who nearly match the attributes and allow the district data administrator to choose an existing ID or have the system assign a new one. The eScholar Uniq-ID® for Students system incorporates administrative rights capabilities which ensure that only authorized administrative personnel can access student level information.

2. *Student-level enrollment, demographic, and program participation information.*

   The CDW is built on an extensible data model which contains over 2,500 data elements within over 30 data categories. The data model allows SEAs to maintain detailed data for individual students throughout their education – from pre-school through post-secondary and into their workforce experience. The CDW solution includes almost 200 student attributes including gender, race/ethnicity, economic status, address, contact and guardian information, primary language, challenges, LEP participation, weighted and un-weighted GPA. CDW provides the capability to store a rich set of course and grade related data and tie it to a student's record for reference and analysis throughout a student's career. Additionally, a wide variety of data on programs and special education can be tracked longitudinally including a student's level of and changes in participation in one or more programs or special education services.

3. *Student-level information about the points at which students exit, transfer in, transfer out, drop out, or complete P-16 education programs.*

The CDW enables key data about individual students to be tracked, including history of student mobility through enrollment, withdrawal, transfer, and dropout, as well as participation in programs and extracurricular activity.

4. *The capacity to communicate with higher education data systems.*

The CDW is built on an open architecture to facilitate interoperability using education and technology industry data and data exchange standards. eScholar as an organization has been very involved in the development of education data standards through the NCES and the development of seamless interoperability through the SIF, including the incorporation of Web Services technology to facilitate more efficient and effective data exchange.
The addition of the eScholar Complete Data Warehouse® for Postsecondary to the eScholar Complete Data Warehouse® product suite expands the ability of SEAs to seamlessly connect a student's PK-12 academic history to that student's postsecondary education experience. The combination of CDW and eScholar Uniq-ID® for Students provides a complete solution for the effective management and tracking of individual student data throughout their education experience.

5. *A State data audit system assessing data quality, validity, and reliability.*

Ensuring data quality is a key focus of the CDW. The system allows an administrator to configure data loading and data quality rules specific to each collection, including the ability to control which users can upload what data, which elements are required for each collection, as well as how data should be transformed during each collection, and which data quality issues will result in rejection of specific data rows. Packaged data transformation and load routines automatically validate data integrity and prevent duplicate and orphan records from corrupting warehouse data. Data rows that are rejected by the system are presented in error logs that clearly identify the data row(s) and column(s) in error and are organized by error type.

With respect to preschool through grade 12 education:

6. *Yearly test records of individual students with respect to assessments under section 1111(b) of the Elementary and Secondary Education Act of 1965.*

The eScholar Complete Data Warehouse® for PK-12 includes a comprehensive assessment category designed to store all student test data – high-stakes tests, formative assessments, classroom exams and quizzes, etc. – within a single set of tables, enabling longitudinal analysis of test results for any student cohort. Multiple levels of scores, achievement levels, and other student performance measures and attributes can be stored for any test, and each level may be associated with the appropriate state standard.

7. *Information on students not tested, by grade and subject.*

The CDW enables SEAs to identify students who were NOT tested and maintain relevant data with respect to those tests and students over a specific period of time. Student test results may contain a status, which can reflect that a student was not tested for any reason. Alternatively, students not tested may be identified by analyzing test results within the context of student school enrollment, course enrollment, program participation, or other data.

8. *A teacher identifier system with the ability to match teachers to students.*

The combination of eScholar Uniq-ID® products and the CDW enables SEAs to manage the identities of students and staff and link class-specific student data such as grades, course enrollment and attendance with class instructors at a specific point in time rather than just at the school year level. This comprehensive combination allows SEAs to analyze course instructor information in the context of student grades, student course enrollment, and student course attendance.

9. *Student-level transcript information, including information on courses completed and grades earned.*

CDW maintains student level transcript information including courses and grades at predefined marking periods. Both numeric and alpha grades are accommodated.

10. *Student-level college readiness test scores.*

    CDW provides a sophisticated structure for collecting and analyzing assessment data. Virtually any type of standardized assessment results data can be loaded, including ACT, SAT, TerraNova, SAT9, and state and district specific assessments. Individual data elements include proficiency level, raw score, scaled score, national percentile, stanine, grade equivalent and many others. The eScholar integrated data model provides the capability for easy analysis across various assessments at subtest and skill levels.

With respect to postsecondary education:

11. *Data that provide information regarding the extent to which students transition successfully from secondary school to postsecondary education, including whether students enroll in remedial coursework.*

    CDW enables SEAs to capture student level data with respect to both P-12 and postsecondary educational experience, including, courses, grades, standardized test results as well as additional remedial or special education programs that the student may have participated in.

12. Data that provide other information determined necessary to address alignment and adequate preparation for success in postsecondary education.

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reference and analysis throughout a student's career. Additionally, a wide variety of data on special education can be tracked longitudinally including a student's level of and changes in participation in one or more special education services. CDW includes a data category - Career & Technical Education - designed to facilitate tracking of data related to the Carl D. Perkins Vocational and Technical Education Act of 2006 (Perkins IV) and eScholar Uniq-ID® for Students enables this data to be linked with specific students.

Why eScholar?

- eScholar is the nation's leading education data management company focused exclusively on improving education by providing educators with the most effective data management tools possible. eScholar products have become the recognized leaders in data warehousing and student/staff identification systems.
- eScholar customers are realizing significant improvements in their ability to meet mandated reporting requirements but more importantly in their ability to improve pre-K through postsecondary student achievement.
- The eScholar Complete Data Warehouse® products are the most broadly deployed and comprehensive solutions available for integrating, cleansing, and managing thousands of education related data elements.
- The eScholar Uniq-ID® products are the leaders in generating, assigning, and managing statewide unique student and staff identifiers.
- Relied on by 11 state education agencies and over 3,500 districts across the country, eScholar products transform the way educators use data.
- For more information about how eScholar can assist you in your 2009 ARRA-RFA efforts contact eScholar Sales at sales@escholar.com or (877) 328-2969.