The New Mexico Early Childhood Integrated Data System (ECIDS): An Overview of the Project

Executive Summary

The New Mexico Public Education Department (NMPED) had a grand vision: Give every child in New Mexico an equal opportunity for success by building an integrated data system that would enable policy makers to make informed decisions about early childhood programs and policies.

In partnership with eScholar, led by NMPED, and funded by a Race to the Top – Early Learning Challenge (RTT-ELC) grant, such an integrated data system became possible. In 2017, NMPED implemented the Early Childhood Integrated Data System (ECIDS), created in genuine collaboration among NMPED; Child, Youth, and Families Department (CYFD); and the New Mexico Department of Health (DOH).

By partnering with eScholar, the leading provider of longitudinal data warehouses to education, NMPED created an integrated data system that allows data to flow into a single repository. The ECIDS project also provided a unique identifier for every child in the system, which while protecting each child's data, enables accurate data analysis. With ECIDS, New Mexico now has a system that promotes accountability, tracks early learner outcomes, and analyzes efficacy of early learning programs.

This case study will provide an overview on the project milestones and learning experiences of the ECIDS development and implementation.

Getting Better Answers Through ECIDS

In October 2015, the State of New Mexico issued a request for proposal for the ECIDS, which had the following stated goals:

1) Expand and align data systems across agencies;
2) Inform early childhood policy and outcomes;
3) Support an early childhood workforce development plan;
4) Create a data warehouse and reporting mechanisms to make policy decisions and;
5) Track the efficacy of early learning programs as evidenced by the longitudinal tracking of child outcomes.

After a competitive evaluation, eScholar was awarded the contract for this project in February 2016. The ECIDS project team, including eScholar, held its project kick-off in March 2016. While PED led the effort, all three agencies were involved in the system design. From the beginning, the team envisioned a cross-agency system that was able to scale up both horizontally and vertically, as well as be searchable by families to find appropriate early learning programs. The system needed to provide answers to complex questions which would require data from multiple agencies. These questions could be answered through a reporting system or by querying the system.

Examples of questions included in the beginning of the project:

Child-level Policy Questions:
- What are the unduplicated counts of children by program?
- How are children doing on assessments?
- Are children on track to be successful in kindergarten?
- Are children identified as at-risk accessing recommended services or programs?

Program-level Policy Questions:
- Are the programs offered of high quality?
- Where are the high-quality programs located?
- Are programs available for at-risk children?
- What are the patterns of participation?

Workforce-level Policy Questions:
- What are the characteristics of the workforce across sectors (education, credentials, experience)?
- What is the mobility of the workforce in the state?
- Where are the most qualified staff persons employed?
- Do at-risk children have access to qualified staff?

The eScholar ECIDS Solution: Starting with a Unique Identifier for All Persons

One of the first milestones achieved following project kick off was the implementation of the eScholar Uniq-ID® as the ECIDS identifier (ID). Traditionally, information about early childhood participants and staff are maintained by separate agency systems, where they are assigned identification numbers. These data must be integrated and linked to analyze and understand program participation and outcomes. At the same time, it is most important not to use meaningful identifiers, such as Social Security numbers, which introduce privacy and security issues. The ECIDS unique ID solved both problems.

eScholar implemented Uniq-ID to provide a single, non-duplicated identifier for each child, and staff person. This unique identifier system eliminates manual matching, while enabling accurate data analysis, pulling data from the integrated system across all source programs. The ECIDS ID is not created based on any personally identifiable information, which protects the privacy of the individual. The ID also remains with the person throughout their participation in the early learning programs, whether it is the child in the program, or the staff member providing the services.

The eScholar Alias ID feature enables the tracking of each child's progress over time as the student moves across different programs, schools, and locations within the state. This cross-walking function equips each individual state data source to link their local IDs back to the state provided ID, to once again be connected to other data sets. This process creates more efficient and powerful analytical opportunities for stakeholders throughout the state.

An Integrated Data System with the eScholar Complete Data Warehouse® for Early Childhood

ECIDS also utilizes the eScholar Complete Data Warehouse (eScholar CDW) for Early Childhood, which allows data to flow from the early childhood agencies to the highly scalable eScholar CDW in an automated and secure manner. After initial mapping meetings, the eScholar team recognized there was a need for a new data model. Distinct differences in the way data was defined by participating agencies, including calendar year definitions uncovered a clear need for the development of a data model. While the eScholar Complete Data Warehouse for PK-12 supported many early childhood data categories, a new model was required to support the integration of data from several distinct agencies.

The ECIDS data model is compliant with the Common Education Data Standards in seven data domains, across about 300 data elements. It utilizes existing data elements used by the agencies, which was done by conducting an extensive gap analysis with the agencies.

The eScholar Uniq-ID component runs a database separate from the data warehouse component, ensuring that all incoming ECIDS records are correctly associated with the appropriate ECIDS ID as well as preventing the duplication of data before the records are loaded into the data warehouse. This robust solution enables the analysis and reporting of the ECIDS data, empowering the Early Childhood programs to answer crucial questions about programs and policies.

To integrate data from the various agencies, eScholar and the ECIDS project team worked together to determine the best method for the extraction, transformation, and loading (ETL) procedures for each source system. With three different agencies and six different source systems, the eScholar team configured a new connector for each one, as shown in the table below. Each system is set up to automatically load new data into the ECIDS data warehouse.

Agency	Source System	Extract Method	Description
Public Education Department (PED)	Student Teacher Accountability Reporting System (STARS)	eScholar direct data extracts with Java extractor	The connector extracts data, which is encrypted and moved into a folder for the eScholar Data Manager
PED	Kindergarten Observation Tool Application (KOTA then ECOT)	eScholar direct data extracts with Java extractor	The connector extracts data, which is encrypted and moved into a folder for the eScholar Data Manager
Children, Youth, and Families Department (CYFD)	Family and Child Tracking System (FACTS)	Database views with custom SQL extractor	The connector extracts data, and encrypted and moved into a folder for eScholar Data Manager
CYFD	Home Visiting System	File generated in eScholar format	System creates extract in eScholar template format and then eScholar Direct Data Extracts with Java Extractor, extracts data, and encrypted and moved into a folder eScholar Data Manager
CYFD	UNM/Pre-K	File generated in eScholar format by UNM	System creates extract in eScholar template format and then eScholar Direct Data Extracts with Java Extractor, extracts data, and encrypted and moved into a folder eScholar Data Manager
Department of Health (DOH)	Family Infant Toddler Program (FIT-KIDS)	File generated in eScholar format	System creates extract in eScholar template format and then eScholar Direct Data Extracts with Java Extractor, extracts data, and encrypted and moved into a folder eScholar Data Manager
Children, Youth and Families Department (CYFD)	Enterprise Provider Information and Constituent Services for Child Care (EPICS-CC)	Database views with custom SQL extractor	The connector extracts data and encrypted and moved into a folder for eScholar Data Manager
Children, Youth and Families Department (CYFD)	Enterprise Provider Information and Constituent Services for PreK (EPICS-PreK	Database views with custom SQL extractor	The connector extracts data and encrypted and moved into a folder for eScholar Data Manager

Key Lessons Learned

As with most projects of this scope and level of complexity, there were challenges to overcome.

The first challenge: gaining access to each of the systems from each agency. This required communication and collaboration led by the project leader, as well as attaining signed agreements from all agencies. This was an essential step, as data mapping to ECIDS could not proceed without access to the source systems. Reported Figen Bilir, eScholar's technical project manager, "We needed to assign unique IDs for each source system and we needed access to their systems to do this. When we began to integrate the data from the various systems into the data model,
we realized each integration would be different. Accessing some databases proved more difficult than we had anticipated. Ultimately, we depended on weekly status meetings with all agencies and midweek and end-of-week status meetings with the PED project manager to move the project forward."

A series of data mapping meetings were initiated among the database architects and source data agencies to begin mapping Essential Data Elements to the Common Education Data Standards (CEDS) version 5 data dictionary. This was expand-ed to include DOH required data fields that are not education related.
While the project formally closed at the end of 2017, the multi-agency effort continued throughout 2018 - 2019 into its next phase as additional agency programs and their respective data were integrated, loaded, and verified; further building their longitudinal data set and populating and laying the foundation for reporting.

ECIDS is now a reporting r eady solution and can report across multiple learning programs crossing three agencies and five early learning programs. ECIDS can set up both authorized and public reports and can analyze outcomes for children and program efficacy. Previously, to analyze data across agencies relied on manual data pulls and matching processes.

Accomplishments, Achievements, and Technical Successes

With ECIDS, policymakers, parents, researchers, and early childhood providers all important members of a child's education support system will be able to measure child outcomes over time.

Two key elements of this project were eScholar Uniq-ID and the eScholar CDW solutions. ECIDS Project Manager Kathryn Cleary explained,
"Through a single identifier assigned to each child, the integrated system will pull data across all early learning programs to identify short and long-term outcomes of early learning interventions for continuous improvement in programs and to ultimately achieve positive outcomes for each child from preschool through high school and beyond."

She also stated that the unique identifier will not track an individual child and does not rate or evaluate the performance or development of young children. Through the unique identifier, Cleary added, "ECIDS will provide population level outcomes on how children are faring throughout New Mexico."

During the eScholar CDW implementation, ECIDS integrated data from the three distinct agencies to create a data warehouse that combines data sets across these agencies. This allows users of the data to identify how early childhood interventions support and improve well being and education outcomes.

Just one year after implementation, New Mexico is planning to enhance their ECIDS system to secure crucial program funds, through their pursuit of the Preschool Development Grant Birth-Five (PDG B-5). The use of the ECIDS system in conducting New Mexico's PDG B-5 needs assessment, will allow stakeholders to accurately assess and invest these funds in the areas they are most needed.

With ECIDS, policy makers will be able to make informed decisions about programs and policies that promote positive outcomes in the following ways:

- Measure early childhood program impacts on kindergarten readiness
- Help stakeholders identify short and long-term outcomes for continuous program improvement
- Count the number of children served by multiple early learning programs
- Assess the impact of qualifications and training of early learning program staff
- Allow parents to make informed decisions about quality programs in their area
- Evaluate program alignment across depart-ments serving children ages 0 through 10 or grade 3

ECIDS met the project goal of assisting agency staff in making policy decisions and tracking the efficacy of early learning programs by:

- Creating a data collection system to record information related to the administration of the Kindergarten Observation Tool (KOT) as a part of the RTT-ELC grant.
- Creating reporting readiness that will provide meaningful access to the combined data, including displays based on geographic locations (geocoding).

Conclusion: Data-Driven, Data-Informed, Data-Powered Decision Making

Through the RTT-LC grant, New Mexico, in partnership with eScholar, designed a "system of systems" for the purpose of leveraging data for informed strategic and day-to-day decision making at the child, parent, teacher, administration, and agency levels. By creating an environment that allows young children to build a strong foundation for learning, New Mexico is successfully:

- Raising Quality: Ensuring a highly qualified and skilled workforce to best support children's optimal development; and implementing FOCUS, a rating system that allows parents to identify high quality programs.
- Promoting Accountability: Developing a system that integrates data from across programs serving young children to measure child outcomes over time and to enable planning for early learning investments.
- Supporting Schools in Meeting Each Child's Needs: Through the Early Childhood Observation Tool (ECOT or formerly known KOTA), assessing school readiness to understand individual child needs at the beginning of school and provide early interventions for positive learning outcomes.
- Investing in Communities: Identifying where children are at the greatest risk and prioritizing services to meet needs in designated areas.

ECIDS: QUICK FACTS

Project Name: Early Childhood Integrated Data System (ECIDS)
Project Funding: Race to the Top – Early Learning Challenge (RTT-ELC) grant
Data Integrated: 5 Major NM agencies' data systems
Agencies Involved: 3
NMPED: New Mexico Public Education Dept
CYFD: Children, Youth, and Families Dept
NMDOH: New Mexico Dept of Health
TIMELINE
Project Kickoff: March 2016
Initial ID assignments: July 2016
Data Warehouse installation: December 2016
Data Integration: January 2017 – December 2017
Project Close: December 2017
Success factors and lessons learned:
- Buy-in from each agency is essential.
- Committed participation by agency leads is essential.
- Determining right attendees for training is essential.
- eScholar also highlights the importance of developing a sustainability plan.

VISION: A SYSTEM OF SYSTEMS

NMPED's vision was large scale, as all great visions should be. It envisioned building a unified early learning data system that would provide educators, families, and policymakers with the information needed to:

- Provide the most current information educators need to nurture and teach the children in their programs
- Provide families with the information they need in order to make informed choices about which programs are best for their young children
- Track young children's development and progress as they are increasingly ready for school
- Measure the quality of and improvement in all of New Mexico's early learning and development programs
- Assess the status of young children as they enter kindergarten
- Follow students from their earliest enrollment in early childhood programs through entrance into kindergarten; elementary, middle, and high school; higher education; and the workforce.

New Mexico based their plan on the commitment to create an early care, health, and education "system of systems" that transformed disconnected, siloed programs into a coordinated system with a common focus to ensure every child has equitable access to appropriate services, acknowledging their uniqueness and enabling them to reach their full potential.