



# Early Childhood Longitudinal Data System

State of Minnesota – Minnesota IT Services

**CATEGORY:**

Cross-Boundary Collaboration and Partnerships

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## EXECUTIVE SUMMARY

Minnesota state government invests a lot of money into programs that help children. Decision-makers rely on comprehensive information to create policies around how to spend public money wisely on the programs that are the most beneficial.

For decades, the state lacked a single source of data to turn to for that information. Minnesota had data in bits and pieces, because each government entity collects its own data: the education department collects education data, the health department collects health data, and human services collects human services data. None were linked together, and none were sharing data on a regular basis.

Minnesota has a great deal of data — we just needed a way to share that data among agencies.

Minnesota IT Services (MNIT), the state's central technology agency, the Department of Education, the Department of Health, and the Department of Human Services began a project to build an integrated data system and website—the Early Childhood Longitudinal Data System (ECLDS). ECLDS tracks students from birth to pre-Kindergarten to K-12 to see how children are doing as they move through our publicly-funded programs and systems.

From the beginning of this collaborative project, the project enlisted stakeholders from state agencies and programs, professional associations, and local childhood education programs, such as Head Start. This foundational data system was built for longevity and growth, and it will continue to provide more robust information over time as the state adds more data. To do this, the project included establishing data governance, a data warehouse, a data dictionary, user guides, videos, maps, and other related artifacts that maintain transparency and systematic decision-making.

ECLDS is available to the public through an online user-friendly website. Users can choose from a variety of data search options. For example, a user can look up how groups of children did in a specific district or in a regional area after participating in a certain type of early childhood program. For the first time, now anyone can explore how children benefit from government programs when they are very young.

The system shows only population data, not data on individual children. Data suppression is employed to prohibit release of child identity. Data privacy, confidentiality, and security practices related to student-level longitudinal data systems and other uses of student data were carefully built into the data governance structure, implemented, and explained in-depth to stakeholders.

All Minnesotans have a vested interest in the education, development and well-being of our children, whether we're lawmakers, educators, community members, or parents. ECLDS shows correlations between children's growth and achievement in relation to their participation in educational and social programs over time to see collective contributions of those programs.

With ECLDS, collaboration, technology, and data sharing, Minnesotans are now able to access and analyze comprehensive data to make informed policy and spending decisions for the future of our children.

## EXEMPLAR

Information technology (IT) is now an integral part of digital government in Minnesota, especially in the realm of data, data governance, and the systems needed to extrapolate the data in meaningful ways. This project exemplifies our movement towards modernization, and the collaboration that is essential to data sharing, as well as acting collaboratively upon that data to improve outcomes.

In order to fulfill the need for easy to access, comprehensive information, collaboration across state government, and multiple, diverse local organizations was key to the successful implementation. The project plan was designed with collaboration and stakeholder engagement at its heart.

The ECLDS team followed some important best practices, and created some of its own along the way:

- IT and Business/Program project plans were aligned around milestones to support success. This was particularly essential as work began approximately 12-14 months behind schedule.
- Roles were clearly defined for all members throughout the project to maintain momentum.
- IT and Business/Program leads met bi-weekly to maintain continuous communication and reduce surprises.
- An iterative process for analytics ensured that the best possible product was produced and offered multiple opportunities for feedback.
- We took advantage of the wisdom and infrastructure of an existing Statewide Longitudinal Education Data System (SLEDS) to create efficiencies.
- Members of the governance groups came from both the ECLDS and SLEDS governance teams, and from members of stakeholder groups, to provide consistency for technical staff and to build foundations for future planning.
- All work was documented, both technical and program, to provide history, support transparency, and aid in transitioning new team members.
- Persistence, and a commitment to the need for and benefits of an ECLDS in our state helped to weather criticism, reluctance to move forward, and all of the other delays that typically occur during a complex project.

## CONCEPT

Minnesota IT Services (MNIT), the state's central technology agency, the Department of Education, the Department of Health and the Department of Human Services began a collaborative project to build an integrated data system and dashboard—the Early Childhood Longitudinal Data System (ECLDS). ECLDS tracks students from birth to pre-Kindergarten to K-12 to see how older children are doing as they move through our publicly-funded programs.

Minnesota state government creates policies around spending public money wisely on the combinations of programs that are the most beneficial to children and families. That work relies on comprehensive data to help to guide decision-making. This project helped Minnesota move away from isolated, infrequent, and time intensive data sharing efforts.

## **Application Architecture, Accessibility and Security**

This was a custom-built data linking engine and warehouse application. The data warehouse was implemented in Microsoft SQL server using Business Intelligence tools. The website reports were built using HTML5 and WebFocus supplied the web service. MNIT teams worked closely with accessibility coordinators to test the application for accessibility functionality.

We have performed security audits. Limited access to private data is allowed only for the purpose of linking quality assurance. Each individual needs signed-off permissions to receive access to de-identified data warehouse access – also limited to quality assurance work. In partnership with SLEDS, the team follows the Data Access and Management Plan which provides management over access and compliance with data security, and state and federal law. We also provide guidance for Maintaining Privacy on the [ECLDS website](#).

## **Project Management**

The ECLDS team used an iterative project management approach for developing the analytical reports for the site. Each cohort of reports was completed in 3-4 months of gathering requirements and mocking up to receive instant feedback from stakeholders.

## **Assessment and ROI**

ECLDS partners are engaging in a multi-pronged approach to assessing the degree to which the ECLDS has been the planning and information support intended. First, there are two key electronic feedback mechanisms that users can access to provide recommendations or request additional information. Second is regular contact with our practice communities (e.g., early childhood program coordinators, Head Start leads, etc.) to provide training, and gather insights and feedback on the utility of the tool. Finally, we are completing a more rigorous return on investment study that estimates the value of the information ECLDS offers to Minnesotans in relation to the costs. Results should be available in fall 2019.

## **Communications Plan**

The ECLDS team realized that to communicate effectively about and to sustain the ECLDS, it needed the support of active users and data owners. Stakeholders needed to understand ECLDS operations, including data security protections. As the team began developing the ECLDS, we took specific steps to connect with stakeholders and ensure two-way communication.

First, the two ECLDS governance groups (Research & Data Committee and Governing Body) completed a systematic “stakeholder identification analysis” process. As part of that process, the governance groups identified individuals and organizations that had: (a) influence (e.g., advocacy groups that may support the ECLDS); (b) importance (e.g., parents); or (c) both influence and importance for the ECLDS work (e.g., agency leaders and service partners).

The project team worked with stakeholders in group (c) first, that included representatives from state agencies (e.g., Health, Public Health Nursing, and Human Services), service partners (e.g., Head Start, center- and home-based child care, and pediatricians), and advocates (e.g., Children’s Defense Fund of Minnesota and child welfare organizations). Through those focus groups, we discussed the development process and sought advice on how best to communicate about the ECLDS to the public. The project team engaged with stakeholders in groups (a) and (b) as needed during the website’s development and release process. In addition to providing invaluable information regarding communication, the stakeholders reviewed and commented on existing policy questions and provided feedback on site features they desired.

After the launch, the ECLDS team utilized subscription emails to inform users about tool updates and communicate new features. Training modules were developed and are used in one-on-one work with early childhood program leaders and in conference sessions. We also developed a series of [videos](#) about the purpose of the site, how to generate reports, and overall orientation to the complexities of the world of early childhood. As the ECLDS is an integrated data tool, it provides users with a unique cross-program perspective on the status of children and families who use multiple services.

## SIGNIFICANCE

### Scope and Stakeholders

In February of 2016, Minnesota’s Early Childhood Longitudinal Data System (ECLDS) was publicly released with data from the Minnesota Departments of Health, Human Services, and Education.

Specific data in the ECLDS include birth records, child care and early education participation, Kindergarten Entry Assessments, K–12 enrollment and assessment data, early childhood special education child and family outcomes for children receiving services under several programs (IDEA, QRIS data, TANF, SNAP), and teaching licensing. The system is housed in MNIT, Minnesota’s central IT agency. Although the system only recently went live, Minnesota began its systematic stakeholder engagement strategy in 2013. We track an average of approximately 400 users each month to the site.

We realized that the support of active users and data owners was essential in order to communicate effectively about and to sustain the ECLDS. Stakeholders needed to understand ECLDS operations, including data security protections. As development began, the ECLDS team took specific steps to connect with stakeholders and ensure two-way communication.

The project team leveraged the two governance groups (Research & Data Committee and Governing Body) to systematically identify stakeholder groups. As part of that process, the governance groups identified individuals and organizations that were influencers, had important roles (such as parents), or were both (such as agency leaders and service partners).

## **Data Governance Groups and Data Security**

The Research & Data Committee and Governing Body groups constitute the governance structure of the ECLDS project. Both groups have members from the Departments of Education, Health, Human Services, MNIT, the governor's Children's Cabinet, and professional associations representing the practice communities from health, human services, and education. The Governing Body is the decision-making entity for ECLDS governance. The Governing Body appoints members to the Research & Data Committee.

The Research & Data Committee is comprised of members knowledgeable about data, policy, practice, and child development. They make recommendations to the Governing Body to support the construction, enhancement, and longevity of the ECLDS.

Data security is particularly important, as Minnesota has a culture of data privacy policies and has strong data privacy laws. Because the ECLDS contains data on children, it was essential that stakeholders understand the ways in which data are kept safe. Minnesota needs the input of stakeholders to understand their needs, build awareness, and inform communication planning.

## **Innovative and Distinct: Systematic Engagement of Stakeholders and Feedback**

In order for any data system, and especially an integrated data system, to be useful and meaningful, various stakeholders need to be engaged in an on-going manner throughout the development.

Project teams spent time carefully explaining to stakeholders the types of questions the ECLDS would and would not be able to answer. When Head Start data was integrated, local Head Start leaders were included in the ECLDS governance structure to ensure that the system would be able to address questions to which Head Start leaders wanted answers. As a result of this in-depth engagement, local providers saw the benefits of working together for a unified birth through five early intervention data system.

Our project team engaged with stakeholders as needed during the website's development and release process. In addition to providing invaluable information regarding communication, the stakeholders reviewed and commented on existing policy questions and provided feedback on site features they desired. As the data sharing agreements prohibit sharing of individual data, the ECLDS can answer questions at the county or school district-level. Stakeholders knew that they would not be able to receive data about their particular program participants, so it was very important that stakeholders agreed to the types of information that would be helpful to know at an aggregate level.

Minnesota's policy questions cover topics on participation (e.g., by demographics and intensity), quality (e.g., QRIS ratings and staff qualifications), and outcomes (e.g., K-3 outcomes by mix of service receipt). Stakeholders expressed an interest in having the capability to compare views of data (e.g., comparing different districts, or one district's data to the state data) and to have a downloadable feature of analytics created for use in grant applications and reports. The tool also includes multiple filters that allow the user to see the data in relation to specific sub-groups (e.g. race, home language, or disability type). Stakeholders also suggested the site include descriptions of Early Childhood programs, as some

users may not know the differences between Early Childhood programs. All of these features have been implemented on the ECLDS site.

## **Costs**

The technical team consisted of 10 people and two business sponsors. The initial project cost (under the Race to the Top grant) was \$5 million.

## **IMPACT**

Before this initiative, easy access to comprehensive data from disparate sources was not possible. To answer cross-system policy questions, gathering data involved manual processes, contacting multiple agencies and programs, and navigating diverse systems. This process also typically involves drafting legal data sharing agreements and monitoring data destruction when analysis is complete. Minnesota agencies and programs collect millions of data points, but had no way to share that data across programs and across agencies.

Qualitative benefits are numerous. For the first time, anyone can easily explore how children benefit from government programs when they are very young. The system does not reveal data on individual children. Research shows that the early years of a person's life are very important, so decision-makers need to know whether Minnesota's programs for young children are helping. ECLDS allows anyone to easily see information on the results of multiple programs. Learning what works now will inform what we do in the future to help children thrive, and provide insights into how they move through the education system and into the workforce.

This innovative tool has become a go-to source for anyone interested in children's well-being, including lawmakers, educators, community members, and parents. ECLDS can help users understand patterns of use and needs, and eventually see whether our state is spending public money wisely.

The immediate impact is that through this incredible collaboration between business and IT, Minnesota now has a foundation of data in ECLDS to help guide policies and decisions. The long-term impact is being able to identify trends and patterns over time that can help fine-tune programs to better meet the needs of Minnesota's youngest residents.