Project Closeout Report

Submitted to Project Oversight on 04/11/2023

GENERAL INFORMATION

Project Name: Statewide Longitudinal Data System Data Utilization Project

Agency Name: ND Information Technology Department

Project Sponsor: Ravi Krishnan

Project Manager: Heather Raschke

PROJECT DESCRIPTION

The State Longitudinal Data System (SLDS) was awarded a grant, effective October 2015, to build on the progress made with the SLDS. This project is to improve data literacy and use among current and pre-service teachers, improve use of student-level longitudinal data to increase college readiness and completion, and promote strategies designed to support data-driven decision-making to better meet workforce demand and improve workforce supply and demand policy development.

SCHEDULE AND COST METRICS

	Project Start Date	Baseline End Date	Baseline Budget	Funding Source	Actual Finish Date	Schedule Variance	Actual Cost	Cost Variance
Original Baseline	7/19/2016	09/30/19	$6,475,690.00	100% Federal grant	11/15/2022	98.1%	$7,421,685.56	-14.6%
Final Baseline		11/15/2022	$7,425,690.04	Federal grant + SLDS General Funds	11/22/2022	-1%	$7,421,685.56	0%

Notes:

Budget changes:

- A $200,000 federal grant was obtained for approved scope changes.
- SLDS General funds in the amount of $750,000 were transferred to the project for approved scope changes.

Schedule changes: Three no cost grant extensions of twelve months each were approved by the Department of Education and the Executive Steering Committee. The scope changes were completed within these schedule extensions.

MAJOR SCOPE CHANGES

Major Scope Changes and Impact on Budget and Schedule:

1. Federal grant was obtained for the following scope: Blockchain.

   Effect on Budget: Increase of $200,000
   Effect on Schedule: None

2. SLDS General Funds were moved to the SLDS Data Up project for the following scope: Blockchain work with e-Transcripts.

   Effect on Budget: Increase of $400,000
   Effect on Schedule: None

3. SLDS General Funds were moved to the SLDS Data Up project for the following scope:

    a. Open Salt
    b. Mobile Wallet digital credentialing
    c. Apprenticeship Data
    d. Software Purchases

    Effect on Budget: Increase of $350,000
    Effect on Schedule: None

4. Grant funds for the project were used to add the following scope: STEM Asset Map

    Effect on Budget: $0
    Effect on Schedule: None

OBJECTIVES

Business Objective	Measurement Description	Met/Not Met	Measurement Outcome
Business Need/Problem 1: In-service and pre-service teachers effectively utilize SLDS data toward improving PK-12 student achievement			

Business Objective	Measurement Description	Met/Not Met	Measurement Outcome
1.1 Improve on-demand user supports and high quality digital training system	<u>Measurement 1.1.1:</u> Create digital SLDS Reports User Guide <u>Measurement 1.1.2:</u> Create training videos for accessing DLDS and DLDS reports <u>Measurement 1.1.3:</u> Expand resources to include standards based assessments (new NDSA Smarter Balance) <u>Measurement 1.1.4:</u> Expand portal to include interactive integrated data produced by teachers (grouping by skill cohort, professional development, interventions applied, etc.) <u>Measurement 1.1.5:</u> Develop a Training data warehouse and training portal site with real case studies <u>Measurement 1.1.6:</u> Expand on the PK12 warehouse to include multiple instructional staff roles assigned to a classroom and implement teacher of record assignments linked to PEP-20W and ESPB (teacher licensing) which will expand the Staff domain in the SLDS and link the teacher through JSND, K12 and PEP-20W	Met	See Attachment A for a description of the outcomes.
1.2 Formalize data utilization plan	<u>Measurement 1.2.1:</u> Analyze and interpret needs assessment data <u>Measurement 1.2.2:</u> Outline process for addressing gaps in data use <u>Measurement 1.2.3:</u> Formalize training plan based on A+ Inquiry Framework <u>Measurement 1.2.4:</u> Develop course modules for pre-service teacher certification <u>Measurement 1.2.5:</u> Develop governance on SLDS training certification	Met	See Attachment A for a description of the outcomes.

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Business Objective	Measurement Description	Met/Not Met	Measurement Outcome
1.3 Implement data utilization training plan	Measurement 1.3.1: Conduct training for in-service teachers using the A+ Inquiry Framework Measurement 1.3.2: Conduct train the trainer for teacher educators across the state Measurement 1.3.3: Offer college course modules for pre-service teachers	Met	See Attachment A for a description of the outcomes.
1.4 Assess effectiveness of data utilization training	Measurement 1.4.1: Implement follow-up system on pre-service teachers, yearly reports Measurement 1.4.2: Implement follow-up on in-service teachers Measurement 1.4.3: Produce data use reports on all teachers in the SLDS available to school administrators	Met	See Attachment A for a description of the outcomes.
Business Need/Problem 2: Use longitudinal data to improve postsecondary education retention rates			
2.1 Provide NDUS with risk factor Data	Measurement 2.1.1: Research longitudinal student data with a high focus on students who stop out Measurement 2.1.2: Define risk factor formula customized for each type of college Measurement 2.1.3: Send risk factor data marts to NDUS and establish data exchanges	Met	See Attachment A for a description of the outcomes.

Business Objective	Measurement Description	Met/Not Met	Measurement Outcome
2.2 Utilize longitudinal data to identify retention rate factors for ND postsecondary student	Measurement 2.2.1: Align data definitions to support data transmissions between the SLDS and PAR and student retention systems that support PAR Measurement 2.2.2: Analyze student high school course taking patterns and grades in relation to postsecondary retention customized by type of college entered Measurement 2.2.2: Analyze student high school course taking patterns and grades in relation to postsecondary retention customized by type of college entered Measurement 2.2.3: Evaluate effect of course taking patterns and grades on postsecondary student retention Measurement 2.2.4: Provide predictive analytics regarding course taking patterns and college retention	Met	See Attachment A for a description of the outcomes.
2.3 Utilize data to develop interventions and strategies that support retention at NDUS	Measurement 2.3.1: Risk factor and retention factor findings are shared with PAR and campus advisors Measurement 2.3.2: Retention interventions and strategies are developed and articulated Measurement 2.3.3: Assess effectiveness of interventions and strategies to support retention at NDUS Measurement 2.3.4: Results are made available to NDUS and policy makers Measurement 2.3.5: Results are made available to prospective higher education students toward matching their experience with institutions in which they are more likely to succeed.	Met	See Attachment A for a description of the outcomes.
Business Need/Problem 3: *Use longitudinal data to increase postsecondary achievement rates*			

Business Objective	Measurement Description	Met/Not Met	Measurement Outcome
3.1 Develop crosswalk of degree programs at NDUS colleges	<u>Measurement 3.1.1:</u> Utilize common course numbering where available to crosswalk degrees across NDUS (an existing project within NDUS to be completed in the next two years) <u>Measurement 3.1.2:</u> Identify stackable certificates and degrees that exist	Met	See Attachment A for a description of the outcomes.
3.2 Expand pilot of reverse transfer process	<u>Measurement 3.2.1:</u> Collaborate with Texas to determine lessons learned toward comparing student credit attainment to credential attainment across the higher education system (results to WEAC) <u>Measurement 3.2.2:</u> Identify two community colleges and two regional universities or research universities to participate in pilot <u>Measurement 3.2.3:</u> Develop reports that include credit hour summary for students to see what certificates and associate degrees they are getting close to meeting <u>Measurement 3.2.4:</u> Within a community college work with course data to determine if students are close to receiving a degree or certificate and provide this insight to the college and student <u>Measurement 3.2.5:</u> Provide insight to the transferring colleges of the number of students that could receive credentials if courses were offered <u>Measurement 3.2.6:</u> Develop policy and process recommendations for Reverse Transfer Agreements	Met	See Attachment A for a description of the outcomes.

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Business Objective	Measurement Description	Met/Not Met	Measurement Outcome
3.3 Increase completion rates of postsecondary drop out and stop out students	Measurement 3.3.1: Identify students at risk of drop out or stop out Measurement 3.3.2: Identify dropout and stop-out students that have completed significant credit hours Measurement 3.3.3: Analyze credit attainment toward varying certificates and degrees utilizing crosswalk Measurement 3.3.4: Define and implement a student contact and re-engagement plan who have completed 75% or more toward a specific certificate or degree to advise them of certificate or degree completion options	Met	See Attachment A for a description of the outcomes.
Business Need/Problem 4: Build supply/demand data marts for use by institutional researchers and labor organizations to better address workforce demands			
4.1 Develop CIP to SOC crosswalk	Measurement 4.1.1: Work with JSND to target high demand SOCs as priority area to begin SOC analysis Measurement 4.1.2: Identify CIPs within the high demand SOCs Measurement 4.1.3: Collaborate with MN to complete CIP to SOC crosswalk and make available as domain data in the SLDS	Met	See Attachment A for a description of the outcomes.
4.2 Identify postsecondary students working toward certificates and degrees in high demand occupations	Measurement 4.2.1: Identify JSND data sets needed in the SLDS and model them based on SOC Measurement 4.2.2: SLDS Workgroup assists in identifying high demand CIP codes Measurement 4.2.3: Develop data marts from NDUS SLDS data sources that produce workforce pipeline data Measurement 4.2.4: Promote CIPs that are not meeting demand	Met	See Attachment A for a description of the outcomes.

Business Objective	Measurement Description	Met/Not Met	Measurement Outcome
4.3 Build Supply/Demand data marts for use by institutional researchers and labor agencies	<u>Measurement 4.3.1:</u> Bring in the required LMI data into the SLDS <u>Measurement 4.3.2:</u> Develop student education enrollment data marts <u>Measurement 4.3.2:</u> Develop workforce enrollment data marts <u>Measurement 4.3.2:</u> Produce supply/demand reports requested by stakeholders and make publicly available	Met	See Attachment A for a description of the outcomes.
4.4 More effectively and efficiently utilize NDUS as a workforce supply source	<u>Measurement 4.4.1:</u> Track completers to see if they are filling the high demand jobs <u>Measurement 4.4.2:</u> Feedback reports to NDUS on all graduate placement in ND industries by college, SOC, CIP, degree and program	Met	See Attachment A for a description of the outcomes.
4.5 Utilize data to improve consumer information and research	<u>Measurement 4.5.1:</u> Develop reports available to businesses, economic development, legislators and the public on ND supply/demand as it relates to our education pipeline <u>Measurement 4.5.2:</u> Make de-identified research data sets available for other research <u>Measurement 4.5.3:</u> Collect data and measure outcomes of short-term workforce development programs for program administers to measure return on investment	Met	See Attachment A for a description of the outcomes.

KEY LESSONS LEARNED AND SUCCESS STORIES

A lessons learned effort is performed after the project is completed. This process uses surveys and meetings to determine what happened in the project and identifies actions for improvement going forward. Typical findings include, "What did we do well?" and "What didn't go well and how can we fix it the next time?"

Key Lessons Learned

Lesson Learned: In the event a contract developer is suddenly no longer available,
- Ensure all code is checked in nightly
- Have regular knowledge transfer sessions between contractor and NDIT staff to ensure state can take over development if the need arises
- Ensure documentation is up to date

Key Lessons Learned

Lesson Learned: To ensure partner agencies understand how data is displayed and used,

- Educate the business users regarding their responsibility for their data.
- Engage the business in data governance as a necessary process thereby building trust with the agencies the SLDS is involved with.
- Demonstrate upfront to the agencies how data is secured and how low cell counts are applied to dashboards and reports.

Success Stories (as stated by our business partners)

From: Dr. Jen Weber, NDUS Director of Institutional Research

"The SLDS Data UP project directly addressed the need of responding to legislative and governor requests surrounding the retention of NDUS graduates in state. Specifically, studies have been conducted and reports written on retention of graduates in general, retention of graduates from high need fields including nursing, IT, and construction trades. Additionally, studies have been produced that report the retention of NDUS graduates in state who received tuition waivers as part during their undergraduate career.

The ability of SLDS to create the linkage of records for individuals between NDUS and the state workforce has been invaluable to NDUS. It has created a highly dependable, reliable and valid source of data reporting that was not possible before the existence of Data UP."

From: Wayde Sick, State Director & Executive Officer – Career & Technical Education

"The SLDS Data Up project was beneficial for Career and Technical Education. We were able to develop and visualize CTE Pathways on the insights.nd.gov website. CTE Staff completed the process of determining what coursework, in all program areas, were foundational and what courses were more aligned with a specific pathway. With that information, SLDS was able to publish which schools provided these various pathways and enrollment. This included mapping out opportunities and enrollment trend data. The Data Up project also allowed us to create a CTE Insights page for every school district, showing what programs they provided, enrollment and CTE Concentrators.

Another benefit of the Data Up project is we now have a STEM Opportunities map. Working with the STEM Ecosystem, we now visualize who is providing STEM educational activities and where. Although this is not an all- inclusive list, this resource will assist the STEM Ecosystem in encouraging other organizations to provide data."

From Jane Hovda, PowerSchool Specialist, EduTech

"Problem – Pre-Service teachers going into the teaching profession are not prepared to effectively utilize data within a school setting.

Developing, deploying, and providing the online Develop Your Data Mindset to higher education institutions to incorporate or supplement into their curriculum has provided pre-service teachers the opportunity to learn transferable data literacy and inquiry methods necessary for effective data utilization out in the field. Teachers will gain the knowledge to collaborate with their peers when working with data, understanding the foundational concepts and vocabulary used when working with assessment and other student data. When working with assessment data, they are ready to identify strengths and weaknesses of students, develop goals for individual students and classroom, review progress, revise goals and instruction throughout the school year."

From: Ross Roemmich, Management Information Systems Director – Department of Public Instruction

"There are hundreds of significant improvements in the "Insights" Dashboard to help with the North Dakota Accountability Reporting process. I will share only four of them. The first and most valuable improvement is that you can now go to your Accountability Pie Chart and see where your school is doing well or needs improvement. I have included the example below."

Accountability Calculation Breakdown

This chart outlines the accountability score breakout by each of the school performance indicators.
This school had no indicators where it scored zero points.
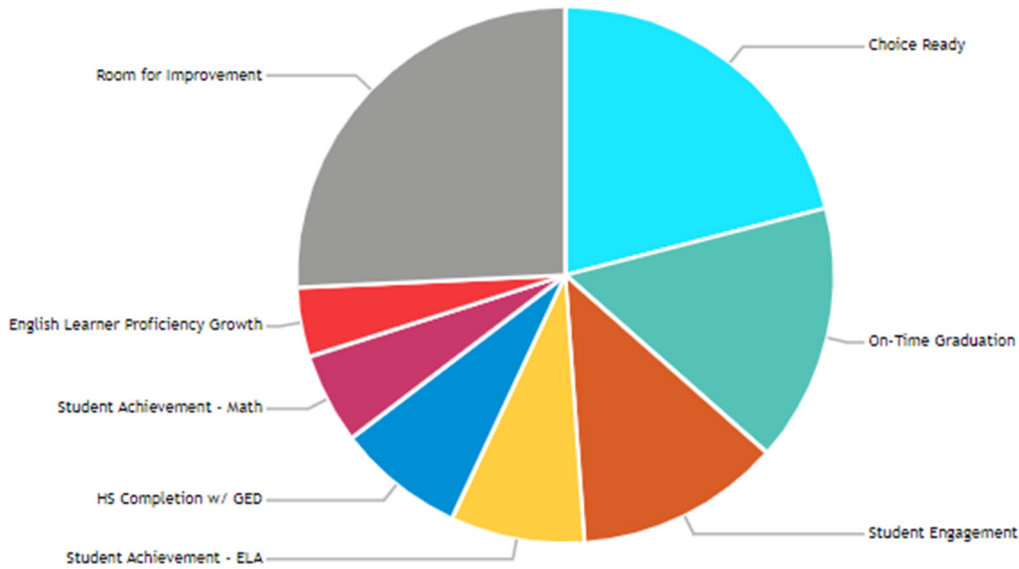
Accountability Calculation Indicators

List of all indicators and how this school fared on the calculation.

Calculation Type	Points Recieved	Room for Improvement	Points Possible
Choice Ready	129.00	0.00	129.00
On-Time Graduation	95.50	4.50	100.00
Student Engagement	76.11	46.89	123.00
Student Achievement - ELA	49.55	27.45	77.00
HS Completion w/ GED	47.33	1.67	49.00
Student Achievement - Math	33.52	43.48	77.00
English Learner Proficiency Growth	25.72	34.28	60.00
Totals	456.73	158.27	615.00

From: Ross Roemmich, Management Information Systems Director – Department of Public Instruction

"The second is the Choice Ready Growth Chart. You can immediately see if your school has growth year over year. The areas include Essential Skills, Post-Secondary Ready, Workforce Ready, Military Ready, and Choice Ready. I have included the example below."
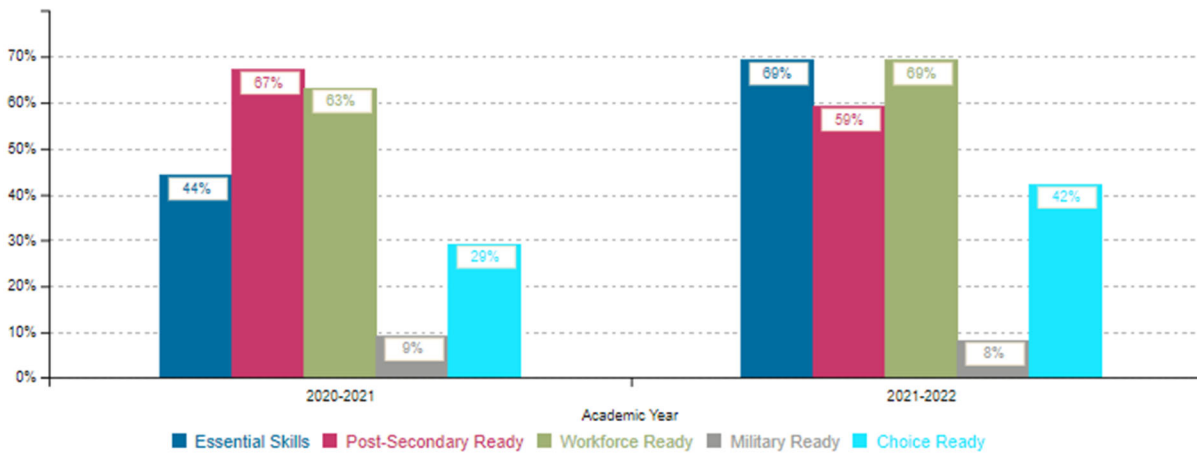
Choice Ready Growth

Below are the values that describe the two year growth of the school's Choice Ready Progress.

Growth:	13.34%		Annual Target:	138 of 138

Choice Ready Metric Performance

This chart shows percent of graduates that meet Choice Ready requirements along with the percent that meet each metric that composes Choice Ready.

Academic Year

■ Essential Skills ■ Post-Secondary Ready ■ Workforce Ready ■ Military Ready ■ Choice Ready

From: Ross Roemmich, Management Information Systems Director – Department of Public Instruction

"The third most obvious is that it is a federal requirement to have that data publicly. It is common for all to view and verify education data at the state and local levels.

Insights acts as an updated directory for the public regarding districts and schools. I think it's fantastic that insights has K12, CTE, College, Workforce, and Adult Education data information in one place."

Explore Public K-12   Explore CTE   Explore College   Explore Workforce

Success Stories (as stated by our business partners)

From: Ross Roemmich, Management Information Systems Director – Department of Public Instruction

"The fourth is the ability for anyone to download Insights Data. The DPI always gets research requests about schools. We now have a place where we can tell people to look and find all that data on an excel spreadsheet. It has limited the number of data requests we receive and need to respond to because we have the Data Download. I have included just a few examples below."

+ Accountability Pie
This dataset outlines the accountability score breakout by each of the school performance indicators. Entities had had no indicators where they scored zero points.

+ ACT - Graduate Max Score
This dataset shows participation rate and student performance for North Dakota public high school graduates. The ACT results are compiled using the test with the maximum composite score for each graduate.

+ ACT - 11th Grade Exam
This dataset shows participation rate and student performance for North Dakota public high school students on the 11th grade ACT exam.

+ Assessment Participation
This dataset shows the participation rate reported as the percentage of students who took North Dakota's required state assessments North Dakota State Assessment (NDSA), the North Dakota Alternate Assessment (NDAA), or the ACT exam. Note: Due to COVID-19, 2019-2020 data is a placeholder year and contains 2018-2019 data.

+ Assessment Performance
This dataset shows the performance of students who took North Dakota's required state assessments North Dakota State Assessment (NDSA), the North Dakota Alternate Assessment (NDAA), or the ACT exam. Note: Due to COVID-19, 2019-2020 data is a placeholder year and contains 2018-2019 data.

+ Attendance
This dataset shows the average daily attendance for students in an entity.

+ Choice Ready
This dataset shows Choice Ready performance and growth for entities in North Dakota.

+ Chronic Absenteeism
This dataset shows the attendance data for chronically absent students.

Attachment A: Measurement Outcomes

Priority 1 Instructional Support

Outcome 1: In-service and pre-service teachers effectively utilize SLDS data toward improving PK-12 student achievement

a. Outcome Summary and Major Accomplishments:

This outcome is focused on developing and implementing training, reports, and other resources to support in-service and pre-service teachers' effective utilization of SLDS data toward improving PK-12 student achievement. ND planned to use grant funds to improve on-demand user supports and create a high-quality digital training system as well as formalize, implement, and assess the effectiveness of a data utilization training plan.

A SLDS Reports Reference Guide was created and made publicly available on the SLDS website with descriptions of more than 30 reports, including guiding questions that may be answered by each report, intended audiences, and recommended uses. The SLDS model was expanded to include standards-based grades, and reporting solutions have been developed to help schools answer questions based on reporting needs identified through collaborations with schools, such as: Which standards represent the highest and lowest levels of performance? How many students scored at each level by standard? What is each student's score by standard and term? In response to the increasing implementation of Multi-Tiered Systems of Support (MTSS) in ND, the SLDS partnered with ND MTSS leadership to develop multiple reports (e.g., Early Warning, Tiering Analysis, Progress Analysis, and Adequate Progress Dashboard) for increasing efficiencies in accessing and analyzing data for specific MTSS purposes. Furthermore, the SLDS has been supporting MTSS evaluation by developing a solution to collect and analyze Self-Assessment of NDMTSS (SAND) school-level implementation data that are being utilized in a study to measure relationships between MTSS implementation and student outcomes that are available in the SLDS. The SLDS developed a training data warehouse as a copy of the production Education Portal with mock data to support data utilization training of pre-service and in-service educators, and a few use cases for leveraging the SLDS to support MTSS have been written using data retrieved from the training warehouse and disseminated to schools implementing MTSS.

The SLDS collaborated with pre-service and in-service stakeholders to formalize a data utilization training plan. They created "Develop Your Data Mindset: Essentials of Educational Data Use," an online curriculum based on the A+ Inquiry framework that was intended to improve educator competence in using data, actions with data, and attitudes toward data. The 15-hour asynchronous course was developed using Articulate Storyline and is available to pre-service and in-service teachers through ND Center for Distance Education's (CDE) Learning Management System (LMS).

The data utilization training plan was implemented by promoting and formally enrolling pre-service and in-service teachers in the online course and by creating pages on the public SLDS website with curriculum content so the online modules and supplemental resources would be available to users without formal enrollment. During the first full year of implementation, 227 educators (165 pre-service and 62 in-service) participated in the curriculum through formal enrollment. All modules were required to be completed by students enrolled in an assessment class at Mayville State University; some modules were required to be completed by some students at Minot State University; and modules were made optional for students by faculty at North Dakota State University, University of Jamestown, and Valley City State University. In-service who formally enrolled in the curriculum were eligible to earn one professional development credit. In-service and pre-service educators have continued to formally enroll in the course since it was released.

The SLDS assessed the effectiveness of the data utilization training by embedding assessment methods into the online curriculum. Curriculum assessment was guided by a program development and evaluation framework that was based on five categories of assessment, a theory of change, and a logic model. The A+ Inquiry framework was utilized to operationalize outcome evaluation methods as needed. The assessment system included more than 1,000 assessment and survey items that were embedded in the curriculum and aligned with xAPI calls that were sent to a Learning Record Store (LRS) as participants progressed through the curriculum where the LRS can be transitioned to cloud storage. Data models were created to produce tables and charts in five reports based on 372,456 xAPI statements to support assessment of the intended outcomes and some intended outputs. The increases in average pre- to post- scores on the embedded Teacher Data Use Survey (TDUS) suggest that completing the curriculum may improve competence in using

data and actions with data. Approximately 93% of respondents to a *Develop Your Data Mindset Perceptions of Value Survey* indicated that the curriculum may increase pre-service educators' capacity to use data, and 93% indicated that completing the curriculum may increase in-service educators' capacity to use data. These and other assessment methods and findings relevant to needs, theory, process, and outcome assessment were published in a 189-page evaluation report available on the SLDS public domain titled, *Evaluating the Develop Your Data Mindset Online Curriculum for Educators: An Assessment of Needs, Theory, Processes, and Outcomes*.

The SLDS created portals for teachers and administrators utilizing Azure AD for statewide authentication of the individuals with NDUS AD pre-teachers allowed security access to a teacher's classroom students. In addition, a student and parent portal utilizing single sign-on from the PowerSchool student information system has been created where students may view their electronic transcript, send transcript requests, apply for in-state public colleges, as well as view and monitor their progress to meeting the State Scholarship. The state allows students to create self-registered accounts for their digital wallets. At this time the State from an identity posture is cautious of social media account logins.

The public portal created has been a huge statewide success. Insights ([Insights of North Dakota (insights.nd.gov)](insights.nd.gov)) was created using ND Department of Public Instruction accountability data and contains much of the Edfacts accountability data reported as well. All schools reference Insights as their annual accountability reports to parents. Insights is referenced throughout much of the deliverables as it addresses K12, CTE reporting, Perkins, workforce supply/demand, postsecondary institution programs, (Labor Market Information) LMI and ND wage data by industry. Many of these data domains are integrated using Onet, SOC, CIP and State course codes giving a highly interactive engagement to the public. Through this funding, the SLDS was able to accomplish the Department of Education's requirement for public reporting and ND was one of the first States to be able to provide this reporting on ESSA. During Covid ND was able to quickly provide online learning and hybrid delivery models in the state, leveraging the statewide deployment of PowerSchool and the SLDS along with Insights to provide daily updates on delivery model enrollments. ND also produced subject level course offerings, such as fine and performing arts, publicly to provide knowledge and insight into course offerings by school district to address equitable course level offerings. Career and Technical Education also was addressed in Insights and is mentioned later on in this report. Insights also provides more interactive offerings through PowerBI embedded reports where the public may explore AP and DC course offerings and enrollments at the school and district level.

The project also created an SLDS training site where teacher and pre-teacher individuals may learn the SLDS with realistic data sets. The training site is an exact copy of the production SLDS environment and built nightly to preserve synchronization with the production dashboards. We are witnessing student teachers now requesting production level access to the classroom data they are assigned, which is a welcome evolution of data use by instructors, and we anticipate data literacy will more rapidly expand based on the exposure to data use while in college.

Through additional funding from the IES SLDS grant program, ND was able to evaluate digital badging, micro-credentialing systems, blockchain and digital wallets in 2 phases. The project has expanded through funding from Walmart Phase III and IV. It has been a successful implementation of the ND eTranscript as a digital credential stored with a wallet the student has agency over and is capable of being shared with employers or institutions as a verifiable credential. This project, created with national with international participation, has been very successful for producing a national standard high school transcript as a Comprehensive Learner Record (CLR 1EdTech standard). The project publishes a verifiable credential to a web wallet where the learner can view their credentials as well as share them. The project allows the learner to publish this credential to a smart phone wallet which allows for peer-to-peer exchange of credentials verifiable using blockchain (Sovrin) networks. While this remains an emerging technology rooted in standards, a successful publish of credentials to the mobile wallet was completed. Sovrin Trust-Over-IP networks allow for the verification of credentials where the person's PII is not on the blockchain nor is their data. The Open Credential Publisher and wallet created in this project is open source and available to anyone wishing to produce verification CLR records. The project expanded under Walmart funding to produce stackable credentials in cybersecurity and welding certificates allowing for the publication of credentials as micro-credential badges into the wallet as well. This project has spawned the Open Badge 3.0 specification which will allow a badge to be wrapped as a w3c verifiable credential and CLR 2.0.As part of the project it was identified that all state courses and standards need to be referenced in the credentials and ND install OpenSalt Competencies and Skills Framework and defined these for reference by the credentials (https://case.nd.gov). A proof of concept with high school student was completed and a production deployment now allows access to any student where the districts have allowed the digital credentials. A publication of the results has been written and available to the participating communities. Additional funding from the Walmart Foundation assisted in completing and expanding the digital credentials and pathway with stackable certificates. ND has currently been awarded an additional grant through the National Governor's Association to continue planning for digital credentials and expanding to workforce use-cases and employer involvement.

Priority 2 College and Career Readiness

Outcome 2: Use longitudinal data to improve postsecondary education retention rates

a. <u>Outcome Summary and Major Accomplishments:</u>

This outcome is focused on supporting improvements in retention rates by using longitudinal data to develop and implement retention prediction models and was completed. The SLDS developed a model that predicted the likelihood of incoming freshmen earning credit the following semester and presented it to administrators at all 11 NDUS institutions in the spring of 2018 during regularly scheduled Academic Affairs Council (AAC) and Student Affairs Council (SAC) meetings to gauge their interests in receiving the datasets. The SLDS sent datasets with fall 2017 freshmen to all of the institutions that requested the data. The data elements in the model included Free and reduced lunch (FRL) status, individualized education plan (IEP) status, high school GPA, 12th grade attendance rate, 12th grade college algebra status, 12th grade pre-calculus status, and academic scholarship status. However, further studies determined the K12 data elements were not required and removed from the risk data. The SLDS facilitated regular meetings with NDUS personnel, as well as researchers and administrators representing four of the NDUS institutions, to develop strategies for implementing the model and inform improvements to the model. The SLDS developed a revised model during the winter of 2018-2019 that was 5% more accurate than the original model and collaborated with participating institutions to define logistics for securely disseminating datasets generated by the model that represented fall 2019 incoming freshmen toward the beginning of the 2019-2020 school year. The work was delayed due to data access barriers that resulted from system updates; however, efforts resumed in the spring of 2020, which led to a revised model that only included data elements available in NDUS systems. The most recent model includes the number of semesters between high school graduation and postsecondary enrollment, number of developmental credit hours, gender, full-time student status, on-campus housing status, ACT composite score, AP exam participation, and high school GPA. Datasets based on the updated model were disseminated to three institutions toward the start of the 2020-2021 school year. The SLDS updated and disseminated the datasets with new enrollments every couple of weeks prior to and shortly after the fall term began so the institutions would have an opportunity to review the data before the start of the year. At least one of the institutions presented the model to their faculty and utilized the dataset to inform decisions about providing supplemental support to students with retention probability scores that were below the cut score that they defined. The SLDS developed a model for assessing the effectiveness of interventions, and interventions at three institutions were identified to measure using the model.

Outcome 3: Use longitudinal data to improve postsecondary education achievement rates

a. <u>Outcome Summary and Major Accomplishments:</u>

ND developed an advisement domain. Reverse transfer reports to community colleges were created and implemented. ND utilized the degree audit feature of Campus Solutions student information system to provide the details of the audit and push the results into the SLDS. The SLDS is used to combine data from the audit and recommend course equivalencies. The volume of data is quite large and nightly batch jobs were created. An Opt-In process is in place for the student as well to participate. The reverse transfer code was used as a basis for drop out stop out, which was built. Drop out/ stop out has been distributed to the colleges for each institution to develop a reengagement strategy. Increasing completion rates has been addressed internally by most intuitions through policy such as Valley City State 4-year institution awarding an associate degree for students exiting before completion of their degree and campuses monitor and engage students regarding on-time completion to degrees.

Outcome 4: Build supply/demand marts for use by institutional researchers and labor organizations to better address workforce demands

a. Outcome Summary and Major Accomplishments:

ND Developed Classification of Instruction Program (CIP) to Standard Occupation Codes (SOC) crosswalks as part of DataUp and deployed this information publicly within Insights as both data downloads and interactive dashboards. The dashboards produced merge labor market data with ND Job Service data which provides ND industry wages combined with degrees and certificates obtained by those working in the industry.

By combining ND high demand occupations, Labor Market Information (LMI) along with ND in-state wages by industry from the Job Service North Dakota (JSND) Workforce Data Quality Initiative (WDQI) warehouse, ND was able to integrate this data with postsecondary programs and provide information on certificates and degrees in high demand occupations. This public information has proven valuable for supply and demand exploration and guide individuals to institutions offering programs in those high demand occupations along with expected real wages in ND. This team effort with JSND and the ND University System has proven to be very valuable and in-use by all arenas interested in education and workforce alignment. Data marts developed from this data is available for download and for internal research in the SLDS.

The inclusion of secondary CTE programs offered has proven to be very effective for regional CTE centers to perform their Perkins planning. Working with CTE staff the SLDS created Plans of Study which more effectively identifies students' area of concentration beyond Career Clusters. This publicly available data is well used through Insights. By identifying program availability down to the school level, it shows equity issues in offerings as well as schools that are not offering courses for a student to complete an area of interest. The SLDS staff worked with CTE to meet Perkins 5 accountability including the SWIS data runs for out of state employment of CTE concentrators.

Supply/Demand data marts for institutional researchers and labor agencies is available as a data download from Insights. The data marts produced are available as interactive dashboards available publicly within Insights and provide valuable research data sets. The LMI data is available from Insights and allow the public to explore occupations available in ND. With the integration of college program availability, Integrated Postsecondary Education Data System (IPEDS) data, real wage data by industry, student program enrollment and student program completers, Insights provides a very valuable presentation of supply and demand in the state along with high demand occupations as identified by the ND Workforce Development Council.

More effectively and efficiently utilize NDUS as a workforce supply source has been achieved by aligning the CIP and SOC codes that are more applicable for the state of ND. We have aligned the data with program offerings and presented the data to the public in very usable and understandable dashboards. These dashboards are being used by high schools as career exploration, by Career and Technical Education within regions for Perkins requirements, and by the Workforce Development Council using to gain insights into supply and demand. Historical postsecondary program completion tracking of wages by degree and industry over time provides valuable insight into the wage accumulation by years' post-graduation (Insights of North Dakota (nd.gov)).

Utilize data to improve consumer information and research was accomplished by building data marts of all college and university program offerings. By producing dashboards within Insights, NDUS was able to replace an outdated website that was updated every two years with program offerings updated every semester. Along with the CIP codes of the programs, Insights was able to integrate supply, demand, and wage data for a clearer picture of the value and marketing of the program. ND worked with the Department of Labor (DOL) to establish data sharing agreements with the DOL Rapids system to gain access to registered apprenticeships. The apprenticeship data is now available within the SLDS with dashboards under development to integrate opportunities into Insights within CTE and college program offerings. The intent is to market apprenticeships for students and the public.