



# The Ultimate Guide to P20W Cradle-to-Career State Data Systems

## Unlocking Education and Workforce Possibilities

By Shivani Stumpf





In this 4-part guide, learn how a connected P20W data system helps K-12 and state government agencies make the most effective use of their data to improve student outcomes and create pathways to social mobility.

## PART 1

# How a Statewide Data System Can Impact Student Lives

Jenny is a junior in a midwestern suburban high school. She's intelligent and ambitious, wanting a successful career. But, like many high schoolers, she's uncertain of what field she's interested in and whether she'll attend college or pursue other post-secondary avenues.

Her state needs her unharnessed talents and has real workforce needs, mostly in information technology. Several growing tech companies have relocated to the region, sparking economic excitement in longtime residents.

However, **Jenny's state doesn't have a connected data system** that could help guide students and fill employer needs efficiently. That means Jenny may not have the direction and guidance needed to help her pursue a life path to the success she desires.

Jose is also a high school junior. Living on the West Coast, he has strong career interests, and his state also has needs. But unlike Jenny, Jose lives in a state **with a P20W data system connecting statewide information** for Jose from pre-kindergarten through college and into the workforce—each of his life stages. His state is making meaningful connections through valuable data helping students get the outcomes they’re looking for and giving employers more efficient ways of finding the talent they need.

Because Jose’s teachers and state policymakers have access to a statewide longitudinal data system, he’s exposed to viable career pathways connected to his natural skills, interests, and areas in which he has the most potential to thrive.

His state provides relevant and timely information to local leaders and policymakers on system-wide impact and outcomes. This puts these stakeholders in the best position to redirect investments, programs, and resources in ways that matter to Jose, his community, employers, and the economy.

**All states need a P20W data system,** giving Jenny career and life opportunities just like Jose. An organized data system helps connect the dots for students along their life path.



**23** U.S. states reported a more than 40% increase in job openings from March 2020 to March 2023. 47 states are above 15%.<sup>1</sup>



There’s a **3.3** times greater unemployment rate for workers without a high school degree vs. those with at least a bachelor’s degree.<sup>3</sup>



**70%** of hiring employers reported that they are experiencing a skills shortage in finding prospective employees.<sup>2</sup>



**38%** of recent college graduates are underemployed or working in a job that typically doesn’t require their degree.<sup>4</sup>

## PART 2

# Defining P20W and Identifying State Challenges

## What is P20W?

In an increasingly data-driven education landscape, the term "P20W"—alternately called "P-20W" or "P 20W"—is quickly gaining popularity. But what does it mean?

P20W refers to "pre-kindergarten through college and into the workforce." In reference to data, P20W data systems connect statewide information throughout each of these student life stages. With P20W data, education leaders can make sound policy decisions, make the best use of resources, and fully support students along their journey through education, work, and life.

P20W

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Pre-kindergarten through college  
and into the workforce

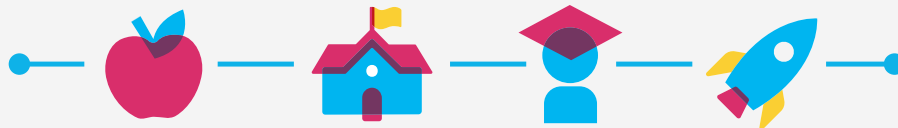


# What Is a Statewide Longitudinal Data System (SLDS)?

P20W data systems are longitudinal, capturing data securely from the same students over multiple years. An SLDS is a comprehensive database that collects, maintains, and manages data for individual students over an extended period in a specific state. Data collected can include education and workforce data, as well as certain other data sets.

Common types of education data include student enrollment, academic performance, teacher and staff data, course and curriculum data, school and district data, and even financial data related to education funding and budgeting. Workforce and additional data can include information related to the labor market, careers, employment, and earnings, as well as student health and social services. This helps educators, state policymakers, and other stakeholders track and monitor student progress and performance from early childhood through K-12, and then into post-secondary education and the workforce.

**P20W data systems connect statewide information throughout each life stage of the student**



## The Problem: Bridging the Information Gap for Leaders

Educators, policymakers, and governments are actively embracing a reimagined, modernized technology model. They are in dire need of driving improved economic and educational outcomes by enabling and investing in a "cradle-to-career" approach to education.

According to Snowflake, a leading cloud-based warehousing company, "Despite their diverse challenges, most city and state governments share a common pain point: data. With more information at their fingertips than ever before, state and local government leaders are itching to use this data more effectively – not only to make their jobs easier but also to optimize the ways they serve citizens."<sup>15</sup>

And as the Data Quality Campaign notes, "State policymakers have a critical role to play in supporting P20W data use and system development. By connecting data over time and across sectors, P20W data systems help individuals make decisions and support policymakers in driving systemic improvements."<sup>16</sup>



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P20W data systems help individuals make decisions and support  
policymakers in driving systemic improvements.**

#### DATA QUALITY CAMPAIGN

A lack of interconnectedness among early childhood, K-12, post-secondary, and workforce development data sources makes it increasingly difficult for education agencies, students, families, and communities to identify resources needed to support all students equitably.

### What Causes a Lack of Data Interconnectivity?

Data lives within different agencies in various databases, clouds, and technology stacks. When it's not connected, it's essentially inaccessible and underutilized. This siloed data structure could be due to several reasons, including:

- Different agencies collecting data in different ways, contained within different database technologies and clouds
- Increasingly hostile digital environment with the growing ransomware attacks and data breaches
- Data privacy concerns with sharing data sets across agencies
- Distrust between agencies
- Departments and agencies wanting to keep their transactional data
- Multiple rules being in place about what individual identifier can be used by each system

For example, some higher education and workforce institutions use social security numbers (SSNs) within their system, raising security concerns while limiting connectivity to other data sources. And some K-12 systems may implement a unique education identifier that remains with a student no matter which district they attend in the state—but it's not connected to anything else in the state.

The lack of connectivity between institutions—like the above examples—can limit your ability to answer critical research questions and have a holistic view of students' pathways from pre-K to K-12 and beyond, including non-educational assistance (e.g., foster care, health, social services, juvenile justice and corrections) that may be contributing to those pathways.



### Current P20W challenges from states include:

- Timely access to relevant data sets to make informed decisions
- Removing lengthy legal obstacles that slow the research process
- Devoting sustainable funding for full-time resources instead of relying on fractionalized staff
- Making P20W data available, accessible, and linked
- Continuing to prioritize privacy and security

The COVID-19 pandemic has underscored the need for a modernized P20W data system to better understand transition points along the continuum of early childhood, K-12, higher education, and workforce, as well as related outcomes.

## Why State Data Systems Can Fail

Unifying—and making useful for operations—massive amounts of disparate data securely and efficiently is extremely difficult. Different systems and incompatible software have siloed data across education and government agencies.

Most state P20W and SLDSs today are custom-built, requiring significant technology and personnel investment to develop these systems from scratch, which can take years to operationalize. Maintenance of these clunky systems over time creates financial strain and risks the long-term durability of such a platform.

Furthermore, the current digitally hostile landscape requires continuous, dedicated, and specialized focus and innovation to secure these platforms. The lack of appropriate security investments and expertise risks exposure to ransomware attacks and data breaches, which can be detrimental to the state and its citizens.

As a result of these challenges, most state P20W and SLDS systems today are only partially useful. Their limitations may include the following:

- Inability to realize the promise of connecting the entire ecosystem of data sets across agencies
- Performance constraints due to the inability to keep up with the latest innovation
- Significant security vulnerabilities
- Resource constraints due to attrition of specialized skill sets and the cost-prohibitive nature of custom-built solutions

Unfortunately, this leaves leaders and policymakers without comprehensive, timely, and relevant insights that are essential to decisions of redirecting investments, programs, and resources in the most effective way possible.

**Without comprehensive, timely, and relevant insights, leaders and policymakers are limited in making critical decisions that redirect investments, programs, and resources effectively.**



## PART 3

# The Solution: Connected Intelligence P20W by PowerSchool

## How a Successful P20W Data System Works

At a high level, PowerSchool's interoperable technology solutions securely connect students, teachers, administrators, and parents—as well as government agencies and policymakers—with the shared goal of maximizing student outcomes and workforce participation.

And more specifically, PowerSchool created [Connected Intelligence P20W](#), the first commercially off-the-shelf P20W platform for K-12.

Powered by [Snowflake](#), Connected Intelligence P20W allows education and government agencies to securely unify, integrate, and access all source system data in a state-specific data cloud. With unparalleled ease, this provides insights into previously siloed, underutilized, and inaccessible data.



**Connected Intelligence P20W by PowerSchool** is the first Data as a Service (DaaS) platform to help K-12 and state government agencies make the most efficient and effective use of their data, with the power to improve student outcomes and create pathways to social mobility.

"We're very excited at the success we're seeing with Connected Intelligence, the first fully managed Data as a Service platform for K-12 schools and government agencies," says PowerSchool CEO Hardeep Gulati. "Connected Intelligence provides a centralized data lake with real-time access and insights of education data across all systems—including PowerSchool or third-party systems—within or outside the district. This allows stakeholders to uncover deep insights and improve decision-making in enhancing their operations and student outcomes."



**Connected Intelligence... allows stakeholders to uncover deep insights and improve decision-making in enhancing their operations and student outcomes.**

HARDEEP GULATI  
POWERSCHOOL CEO

The integrated platform unleashes the power of artificial intelligence and machine learning by expanding access to all structured, semi-structured, and unstructured data. The advanced data processing capabilities in the cloud empower users with secure, on-demand access without limiting the number of entities or volumes of data to be analyzed.

PowerSchool's Connected Intelligence DaaS solution provides an extensible, off-the-shelf, unified data platform that's secure, integrated, and financially sustainable. The solution breaks down data silos with a purpose-built state-and-district-specific data lake, data warehouses, connectors, integrations, artificial intelligence, and machine learning tools for:

- Predictive analytics
- Ad hoc querying
- Dashboard visualizations

It provides data security, governance, and privacy capabilities to address stakeholders' data needs, including researchers, state and district agency decision-makers, policymakers, educators, students, families, and communities, for easing the transition from education to industry.



## Connected Intelligence P20W Features

This unique platform centralizes data as the foundation to drive systemic change, student success, and economic mobility. Leveraging the unparalleled K-12 education technology expertise from PowerSchool, in collaboration with the industry-leading infrastructure of the leading cloud provider Amazon Web Services (AWS) and the revolutionary data cloud company Snowflake, this unprecedented platform is uniquely positioned to power the holistic student journey from childhood to adulthood with a modernized, sustainable approach.

- The state-of-the-art platform provides native integrations with almost every database technology
- High-performance replication allows for near-real-time data syncs into the data lake
- Built-in data observability and AI-ML-based anomaly detection ensure data integrity and reliability, preventing data downtime
- The comprehensive data ingestion suite supports all types of data sources, including databases, files, and API-based solutions



### About Snowflake: Harnessing the Immense Power of the Cloud

Founded in 2012, Snowflake enables every organization to mobilize their data with Snowflake's Data Cloud. Customers use the Data Cloud to unite siloed data, discover and securely share data, and execute diverse analytic workloads. Wherever data or users live, Snowflake delivers a single data experience that spans multiple clouds and geographies.

The Snowflake platform is the innovative technology that powers the Data Cloud—the global network where Snowflake customers, partners, developers, and data providers can break down data silos and derive value from rapidly growing data sets in secure, governed, and compliant ways.

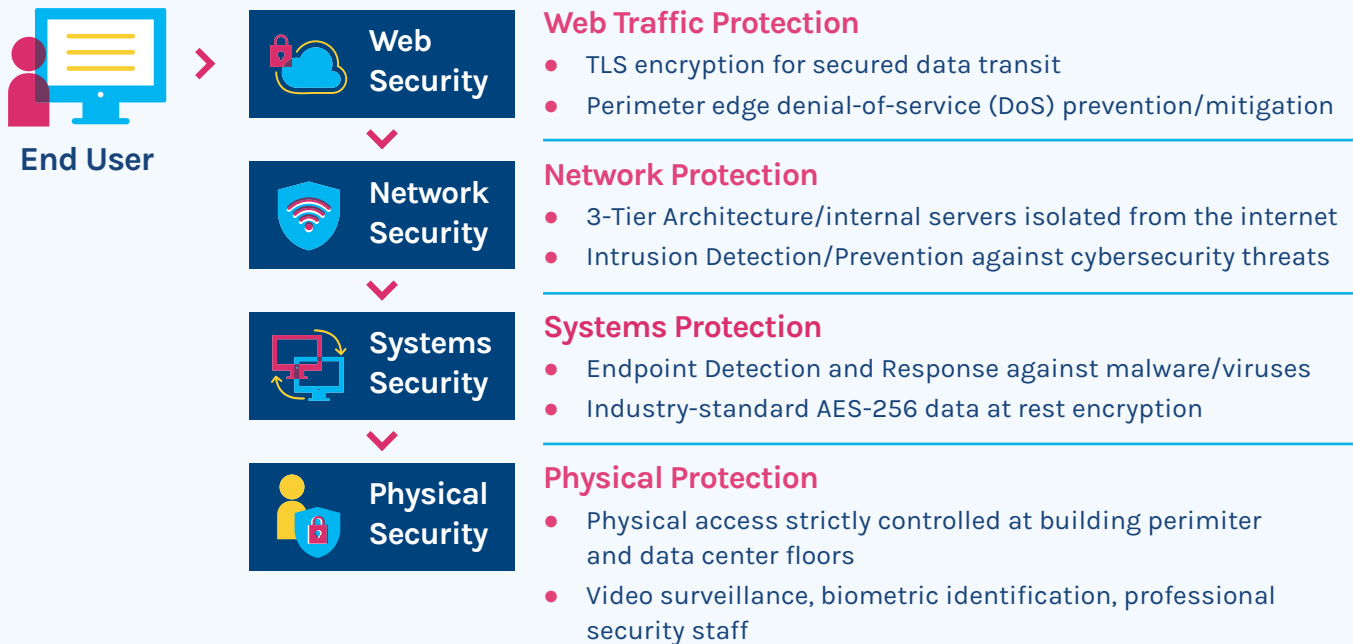
- Optimized latency, performance, and cost ensure a financially sustainable and durable system
  - Industry-standard best practices for **secure connectivity, data transfers, communication, and storage** allow for the most secure data solution. PowerSchool invests in industry-leading security protocols to protect our customer cloud, including intrusion detection and prevention, web application firewalls, advanced endpoint protection, and 24x7x365 eyes-on-glass monitoring by our Security Operations Center
  - Support for **structured, semi-structured, and unstructured data**—including PDF files, Word documents, and more—allow for secure, authorized, governed access to all data sets, unconstrained by volume, data type, years of history, fields, and entities
  - **The fully automated end-to-end solution** drives the fastest time-to-value, allowing immediate use of the data instead of spending months and years building the infrastructure
  - **Ongoing investments in innovation** to bring state-of-the-art technology with features like stringent security, high performance, optimizations for every K-12 workload, and AI-ML models allows focus on data exploration, analysis, and driving outcomes



## About Amazon Web Services (AWS): Making the World a Better Place Through Technology

Amazon Web Services (AWS) Worldwide Public Sector helps government, education, and nonprofit customers deploy cloud services to reduce costs, drive efficiencies, and increase innovation across the globe. Public Sector organizations of all sizes use AWS to build applications, host websites, harness big data, store information, conduct research, improve online access for citizens, and more. AWS has dedicated teams focused on helping customers pave the way for innovation and, ultimately, make the world a better place through technology.

# PowerSchool's Hosting Security Model At-A-Glance



## How You Can Solve Deep Challenges with Connected Intelligence P20W

Practically speaking, Connected Intelligence P20W unifies critical data securely to help create a future-ready workforce and expand equitable pathways toward upward mobility for all individuals. From K-12 education, training, and higher education to labor, health and human services, and social services, Connected Intelligence P20W makes all data accessible in one secure location.



**Unify data to help create a future-ready workforce and expand equitable pathways toward upward mobility**

Now, state agencies can leverage cradle-to-career data insights that highlight opportunities for lifelong success.

Connected Intelligence P20W allows you to connect early childhood, K-12, post-secondary, workforce, and cross-agency data. With holistic data in hand, you're better prepared to make key decisions on investments and mission-critical initiatives such as CTE pathways, accountability, data transparency, and ongoing accreditation.

# How will Connected Intelligence Benefit Academic Institutions, Education Leaders, and Students?

Connected Intelligence P20W prevents government agencies from unnecessarily spending years building and operationalizing a statewide data system. Instead, they can immediately start making use of their data cost-effectively. That way, they can maximize the time-to-value of unprecedented decision-making with the highest data security, privacy, and governance levels.



## For policymakers

Connected Intelligence P20W informs policy decisions with integrated, comprehensive data. These policies can:

- Drive inclusive growth
- Decrease the number of struggling families
- Improve educational attainment through optimal investments in early college, dual enrollment, accelerated programs, certification programs, apprenticeships, and traditional higher education
- Align students and educational institutions for emerging workforce needs

## Analyze Detailed Emerging Workforce Supply and Employer Demand





### For academic institutions

Connected Intelligence P20W further enables data-driven innovation to support student success and acts as a powerful link to rapidly evolving workforce demands, including the opportunity to quickly adapt curricula to meet skill gaps. Ultimately, it will create frictionless pathways to the workforce and back to educational institutions for continuing education and lifelong learning.



### For students

Connected Intelligence P20W creates a lifetime link between a student's performance records, qualifications, interests, skills, and goals in the workforce. Democratized data in the hands of educators will help guide learners to success through personalized support. These new structures and supports help high school students develop and navigate clear pathways to post-secondary education and career preparation, accrue college credit, pursue industry-recognized, in-demand credentials, and gain direct experience in the workplace.

## Top 3 Ways Connected Intelligence Benefits Education and State Agencies

### 1 On-Demand Data Access

With Connected Intelligence, states for the first time can benefit from secure, near-real-time, on-demand access to cross-agency current, historical, and future data. Unlike traditional systems where data insights are limited due to volume and performance constraints, Connected Intelligence is built using the latest technology providing unparalleled performance and timely insights to all their relevant data needs, now and in the future.

Connecting data from early childhood to adulthood using probabilistic data linkages with PowerSchool's Entity Matching can help leaders address policy questions, direct resources, and better support individuals along their education and workforce journeys. K-12 superintendents, post-secondary decision-makers, and local workforce boards can explore education and workforce pathways with extensible, out-of-the-box dashboards and provide targeted solutions so that individuals can receive the credentials they need to meet their employment goals.



## 2 Data Security

Cybersecurity is the top concern of government leaders. And for school district tech directors, cybersecurity has been the highest-ranking concern every year since 2018. School districts possess valuable personal data from employees, students, and families, and typically lack adequate cybersecurity funding and resources in the education sector.

### Connected Intelligence enhances data security by:

- Eliminating legacy methods of storing and sharing data that pose security risks and volume constraints
- Providing a robust backup solution that can help maintain business continuity to combat cybersecurity threats
- Offering a secure and efficient architecture to provide a new way to collaborate with authorized internal stakeholders and external agency partners
- Protecting the security and integrity of the data and applications by investing heavily in industry-leading security protocols, security by design, end-to-end encryption, third-party penetration testing, intrusion detection, auditing, and mandatory training
- Leveraging built-in data security and privacy features of our underlying technology platform, Snowflake

## 3 Turnkey Enterprise Solution with Lowest Total Cost of Ownership

Connected Intelligence provides the most financially sustainable and durable data system. Custom-built solutions are clunky, financially burdensome, and risky with high attrition of specialized skill sets.

With Connected Intelligence, states can now make the most effective and efficient use of their resources and make timely decisions by leveraging turnkey, out-of-the-box, end-to-end features that are extensible for all their data and analytical needs. Connected Intelligence allows the user to switch their focus from building data to actually utilizing the data.

They don't have to worry about the infrastructure, security, maintenance, and ongoing platform innovation. Connected Intelligence incorporates best practices from implementations nationally, so the user can ensure the success of every student in the state.



## PART 4

# Future Possibilities with Connected Intelligence P20W

## Where It's Going

Connected Intelligence P20W is just the beginning of what can be done to prepare schools, districts, and state agencies with the tools they need to help students succeed throughout life. Connected Intelligence P20W is part of the [PowerSchool Workforce Development Cloud](#)—empowering students and career seekers to find meaningful work and achieve lifelong success.

This suite of products provides the complete support school districts and state agencies need to prepare the emerging and existing workforce—from supporting career exploration for students and developing employability skills for career seekers to delivering key insights through unified data for district and state leaders.

### The Workforce Development Cloud offers the following comprehensive P20W Solutions:

- [Headed2 by PowerSchool](#) is a workforce development solution with career exploration tools and guidance. It's publicly accessible, customizable by state, and promotes in-demand careers and supporting programs.
- [Naviance CCLR](#) is a comprehensive college, career, and life readiness program for K-12 schools and districts.
- [Connected Intelligence P20W by PowerSchool](#) provides an end-to-end integrated data ecosystem with all the tools and data connected across agencies for visibility into cradle-to-career insights including the alignment of their emerging workforce with economic needs.

States are preparing tools for all students to provide regional options for career exploration and guided pathways for success. As an example, if a state has an increased need for civil engineers, local colleges can provide free content and use Headed2 and Naviance for built-in methods to support student goals.

The Workforce Development Cloud prepares all students for life after high school with the skills needed for the workforce.

- **Workforce readiness.** Prepare emerging and existing workers with the knowledge and skills to be workforce ready.
- **Equity and access.** Provide equitable access to high-quality career exploration and planning tools.
- **Support career interests.** Deliver career-connected learning opportunities and drive interest and pipeline for high-demand careers in your region.
- **Impactful reporting.** Provide district or state leaders with impactful reporting to inform decision-making and show the ROI of workforce development initiatives.
- **Unified data.** Unify critical cradle-to-career data for key insights that highlight opportunities for lifelong success.



**Workforce  
Development  
Cloud**

COLLEGE AND CAREER

**Get a demo of the  
Workforce Development Cloud**

[Learn More](#)

# Conclusion

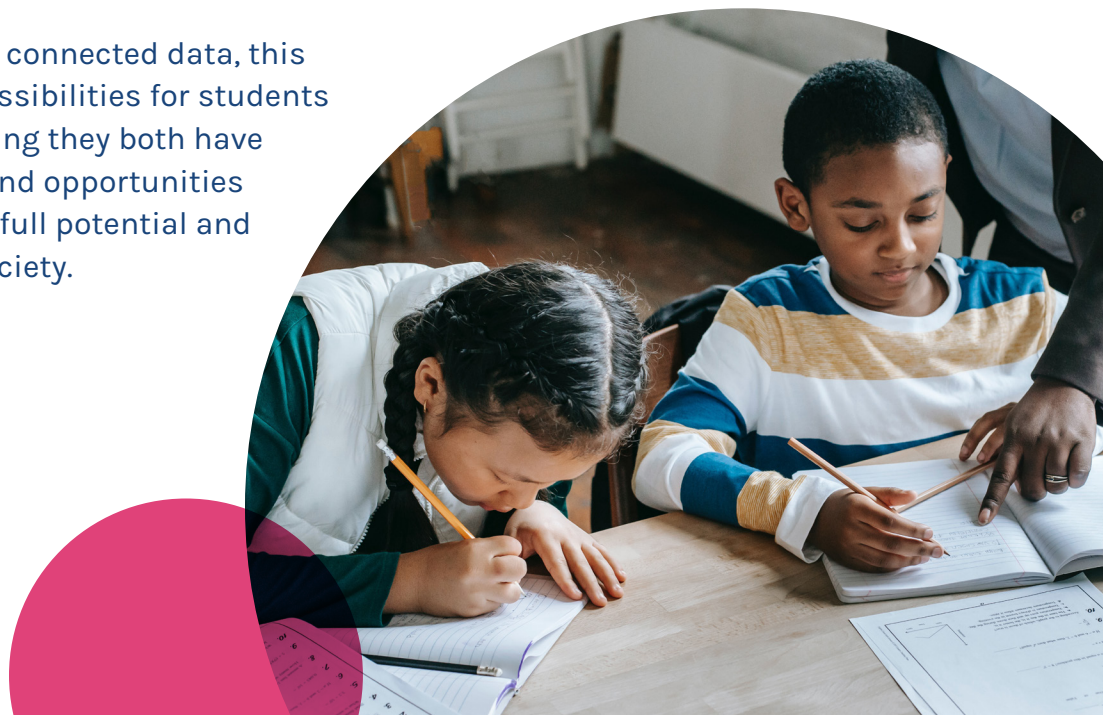
## The Power of Connected Data: Enhancing Student Outcomes with Connected Intelligence P20W

Connected Intelligence P20W by PowerSchool offers a transformative solution to the challenges educators and state policymakers face in leveraging data to improve student outcomes and create pathways to economic mobility. By connecting key data sets inside and outside state governments, this innovative platform unlocks possibilities for students, ensuring they have the guidance and support needed to pursue successful careers and contribute to their state's workforce.

This first-of-its-kind solution securely connects students, teachers, administrators, parents, and government agencies. The platform provides actionable insights and supports evidence-based decision-making by unifying and integrating data from various sources, including early childhood, K-12, post-secondary, and workforce development.

The benefits of Connected Intelligence P20W are far-reaching. Policymakers can drive inclusive growth and improve educational attainment through optimal investments. Academic institutions can enhance innovation and align curricula with evolving workforce demands. Students can benefit from personalized support, clear post-secondary education pathways, and smooth workforce transitions.

By leveraging the power of connected data, this platform opens up new possibilities for students like Jenny and Jose, ensuring they both have the guidance, resources, and opportunities they need to achieve their full potential and contribute to a thriving society.



# Learn More about Connected Intelligence P20W

See the first fully managed Data as a Service platform to maximize educational attainment and career success in action. Request a demo or talk to an expert.

[Get Started](#)





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# About the Author



## Shivani Stumpf

### **PowerSchool Senior Vice President, Product and Engineering**

Ms. Stumpf is an innovative leader and executive with over two decades of experience leading product, technology, and business strategy for SaaS companies. Stumpf has directed successful growth initiatives using data as an asset to drive business transformations. As Senior Vice President at PowerSchool, the leading provider of K-12 cloud-based solutions to maximize student outcomes for over 45 million students, Stumpf is responsible for the company's data strategy, building new innovations to expand the company's total addressable market. Stumpf launched the first Education and Workforce Data as a Service platform, Connected Intelligence. Prior to that, Stumpf was Vice President of Analytics at PowerSchool following the acquisition of Hoonuit, a K-12 Edtech Analytics business where she was Chief Technology Officer. Before joining Hoonuit, Stumpf held technology and product management leadership positions at several Minneapolis-based technology companies, including SPS Commerce, a \$400M publicly traded cloud-based supply chain management SaaS company.

She is a recent Wharton School of the University of Pennsylvania Executive Finance graduate, and holds a Master of Sciences degree in Computer Science from St. Cloud State University in Minnesota and a Bachelor of Science and Engineering degree from the Manipal Institute of Technology in India.



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