

California's Cradle-to-Career Data System

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PREFACE

We recognize that this brief on building California’s integrated data system for education, health, and social services is being published during a public health crisis that is drawing virtually all of the attention and energies of governmental, educational, and societal leaders. Even as that is the case, the current pandemic is demonstrating how data and planning can have profound impacts. As we speak, practitioners, system leaders and policymakers are struggling to understand the basic needs of students and if they are being addressed. At the same time, we know that significant progress can be made, including improving educational outcomes, when an effective information infrastructure is in place.

In this same vein, there is great value in continuing to develop the infrastructure to deliver services to children and youth, and data systems and analytical capacity are critical elements of that infrastructure. We believe it is telling that the Governor’s staff, and the representatives he has appointed, continue to move forward on the development of an integrated, intersegmental data system to support the improvement of education and other service delivery to California’s children and youth. The product of this work can have a profound impact on children’s lives and is critical to pursue even – especially – now. With this framing, we offer this brief to promote a shared understanding of how a broad and coherent vision for data systems integration can drive improvement of services offered to students, and through that, meaningful improvement in their lives.

INTRODUCTION

All of California's students deserve optimal and equitable opportunities for learning. We are better able to achieve that goal when parents, educators and other professionals have the information they need to do the best for students. Recognizing that, California is in the process of designing a new Cradle-to-Career Data System (CCDS) that will enable the many government sectors that serve children – and the various stakeholders who play a part in their lives – to share appropriate information regarding those children, the conditions they experience, and the services they receive.

This brief largely focuses on the multitude of education stakeholders and their key responsibilities which data could support. It also provides an overview of the state's approach to the design of the CCDS, as well as principles that should guide that work in the months to come.

The 2019-20 California State Budget included \$10 million for the design and first phase development of the CCDS.

At present, a workgroup overseen by the Office of Planning and Research (OPR) is taking the first steps in the creation of California's CCDS.

During Phase One, the workgroup is tasked with the following, by its June 2021 deadline:

- The regular convening of representatives from state agencies, stakeholder advisory groups, and technical subcommittees, which began in January 2020.
- Completion of a comprehensive plan by December 2020.
- The initial steps of implementation within the following six months.

See pages 11 – 14 in this document for more details about California's development plan.

A CLOSER LOOK AT THE PEOPLE AND PURPOSES THE DATA COULD SERVE

The 2019 legislation that authorized the CCDS specified a foundational set of information the new data system must to be able to produce. But advocates who supported the legislation, and Governor Gavin Newsom, have greater ambitions, based on the experiences in other states and the recommendations of the Data Quality Campaign (DQC). These ambitions are best expressed by a 2009 report from the DQC¹, which stated that “with longitudinal data systems, key stakeholders ... have the data for the first time to determine not just whether an individual student's performance is improving but also how and why. They can use the information proactively to alter policies, programs and practices to spur continuous improvement at every level – from individual students to the system as a whole – rather than reactively to impose consequences for previous performance.”

In a memo to state leaders in 2019, DQC encouraged California to build “a culture where data is being put to work in service of student success” and expressed optimism that the state could “leapfrog other states in empowering Californians with the information they need and deserve.”

To live up to its potential, the CCDS will have to serve multiple masters. From the state's perspective, the goal is to enable every segment of state government that serves kids to share information, analyze trends across sectors, and better understand how well the state is serving its children and young people.

Data integration will facilitate research and evaluation, as well as public reporting for transparency purposes. And this, in turn, will support effective changes to policy, programs, and resource allocation.

An equally important goal is for the CCDS to support data use at the local level, both to help individuals and to improve programs that serve children and youth. For teachers and families in particular, that means providing personalized information about individual students, in an easily understandable format and in real time, so they can identify opportunities and make decisions. For institutional professionals – such as university officials, workforce development programs, and school district leaders – having greater access to data and an easier path to data sharing can support program evaluation and improvement, and strengthen the ability to address opportunity gaps when and where they occur.

What questions should the new data system address?

Who you are and where you sit in California’s diverse public education system will likely determine what data you are interested in and how you would use them. Your perspective likely also shapes what you think the CCDS is and what it must include.

Families

“Applying to college will be so much easier if we can access and submit our student’s high school transcripts and other information electronically.”

School District Superintendent

“Being able to compare our district’s expenditures and outcomes with other, similar districts will help us identify the priorities we should focus on.”

Researcher

“Analyzing students’ pathways from cradle to career will help me provide insights into opportunity gaps and barriers to student success.”

Kindergarten Teachers

“Knowing what pre-K experiences my students had will help me meet their needs.”

Preschool Leader

“Knowing which of our students thrive in elementary school will help us better assure that all our kids enter kindergarten well prepared.”

Teacher / Educator

“Looking at student outcomes for the teaching candidates who complete our program will enable us to improve our teacher preparation strategies.”

Middle School Principal

“Analyzing which of our 8th graders did well in high school math – and which didn’t – will help me support teachers and identify ways to improve.”

High School Counselor

“With data about students’ course-taking, and what they do when they graduate, we can better guide students regarding how to prepare for college and career.”

State Legislator

“Understanding how health, social, and educational services are being integrated, and the impact of that, will help me identify gaps in support and services, as well as potential cost savings for the state.”

University Official

“Following students after graduation will illuminate how our programs support both individual success and California’s economic well-being.”

Business Leaders

“Information about teacher skills and shortages in our local schools will alert us to mismatches between the workforce we need and what students are learning.”

To achieve their various goals, those who would use data systems to improve outcomes for children need more than just raw data; they also need the data to be understandable and accessible for their purposes. Considerable information exists that describes more deeply the nature and potential of individual, institutional, and state uses of data. In addition, both within and outside of California there are ample, concrete examples of accessibility tools that support these uses.

Breaking Down Data Barriers: Personalized Information Can Support Individual Students

Those who are closest to individual students, including parents, teachers and school-site leaders, can use data to serve students' individual needs and monitor their progress. A 2015 DQC² survey showed, for example, that 9 out of 10 parents use data to make decisions about their child's education and that the same proportion want data about whether their child is on track to graduate from high school.

Figure 1: What do parents want to know? Information from <https://dataqualitycampaign.org/>

89% of parents

say they need data, like grades and test scores, to understand their child's progress so they can help them do their best.

91% of parents

are at least somewhat interested in receiving information about their child's social emotional learning.

Of parents who do not currently receive information about their child,

95% want to know how the school is preparing their child for the future

92% want to know if their child needs remediation or extra help

91% want to know if their child is on track to graduate

Both administrative and technical barriers to data sharing can get in the way of families' and educators' ability to support and advocate for the children under their care. The burden of such barriers falls most heavily on the families with the fewest resources and on the educators who serve them. The CCDS could mitigate those barriers and disparities, and its developers can build on an array of existing California-based initiatives to make a profound statewide impact.

Tools that can make the data accessible for different audiences

- User-friendly dashboards that help parents and the general public understand critical issues about students' progress from the education system through the workforce.
- A website or "data mart" with query tools that allows educators and others to run reports that answer common questions and download aggregate results (with a requirement that data are only shared for groups large enough to ensure that individuals cannot be identified within the results).
- Tools that can support local interventions on behalf of students, such as ways to identify whether students are on track for college.
- A data request process that allows research inquiries to be evaluated, and for de-identified data to be provided to authorized users under clearly articulated conditions.
- Research partnerships that enable approved institutions to conduct deeper analyses of data sets under strict privacy protocols.

For example, some California school districts affiliated with the CORE Data Collaborative have created reports for parents about their child's progress toward graduation and college admission. They need access to both local and state data in order to do this and a more streamlined linked data system at the state level could aid in this process.

As another example, the California College Guidance Initiative (CCGI) streamlines the transmission of transcript information from participating high schools to some of the state's institutions of higher education (IHEs).³ A state data system could support the scaling of this type of service to all schools and IHEs, particularly given that the data infrastructure is already in place.

To break down barriers across sectors, the Silicon Valley Regional Data Trust's (SVRDT) DataZone enables data sharing among multiple public agencies, including school districts, in three counties. The implementation of DataZone was hindered initially by the challenges of executing data sharing agreements among multiple school districts and other child-serving entities. The CCDS could provide guidance and support related to such agreements, saving local leaders tremendous time and effort, as it expands capacity to a statewide level.

EXAMPLE

Using Data to Support Success for Individual Students

Multiple initiatives pave the way for CCDS to support individual student success throughout the state:

College and Career Readiness Reports

Some California school districts have used data from the CORE Data Collaborative to create reports for parents about their child's progress toward graduation and college admission. These compare individual students' grades, test scores, attendance, course-taking, etc., with what they will need to reach various postsecondary goals. The information is intended to give parents a realistic understanding of where their child currently is on their education trajectory and what post-graduation opportunities they are on track for.

Automatic Transmission of High School Transcripts

The California College Guidance Initiative (CCGI) streamlines the transmission of transcript information from participating high schools to some of the state's IHEs.

Students can launch admissions applications for either the California State University (CSU) system or community colleges from within a data tool, which then automatically populates high school course and grade information. Because the information comes directly from the transcript, admissions officers do not have to separately verify its accuracy, thus streamlining the process.

To break down barriers across sectors, the Silicon Valley Regional Data Trust's (SVRDT) Secure Data Environment (SDE) enables data sharing among multiple public agencies, including school districts, in three counties. The implementation of the SDE was hindered initially by the challenges of executing data sharing agreements among multiple child-serving entities. The CCDS could provide guidance and support related to such agreements, saving local leaders tremendous time and effort, as it expands capacity to a statewide level.

Sharing of Student Records Among Local School Districts and Service Agencies

SVRDT's Secure Data Environment (SDE) uses cross-disciplinary data to inform school and agency staff regarding the myriad factors influencing students' lives. The SDE enables data sharing across multiple public agencies, including County Offices of Education, behavioral health agencies, child welfare services, and juvenile justice departments, in San Mateo, Santa Clara, and Santa Cruz Counties. By having access to a more complete picture of individual students' circumstances, local staff who directly serve children or manage youth programs can improve their effectiveness and better meet student needs.

Institutional Actors Can Make Better Decisions

Local PreK-20 education officials and community and business leaders need access to data that will inform their understanding of how well diverse student populations are being served and subsequently support targeted improvement efforts. Having access to data regarding how students fare in postsecondary or workforce endeavors would enable K-12 districts to develop a much more informed perspective on how well they are preparing their own students for future success. With data that spans the various state systems, educators also could more clearly understand how different experiences, such as attending preschool or participating in state-funded afterschool programs, contribute to student progress. The CCDS can support these multiple uses of data in part by delivering to the field consistent metrics that all educators can use to identify areas of concern and measure progress. These leaders also need support to ensure that they have the capacity to analyze data and apply it to solutions. As CCDS is being built, the state should focus attention on ensuring that this capacity for analysis and application is a primary consideration.

Within California, the CORE Districts provide a major, robust example of how to facilitate local data use and analysis. CORE has put school leaders' strategic improvement needs at the heart of their data work. Drawing primarily upon data already collected and reported to the California Department of Education's (CDE) CALPADS system, in concert with key local data, CORE provides its Data Collaborative partners (a group beyond CORE's member districts) with clear data displays, innovative metrics, and other tools that allow district and school administrators to interpret their data and make changes in resource allocation, programs, and classroom practice based on what they learn. The CORE experience also underscores the importance of school districts being able to integrate their local data systems with the statewide system in order to be able to seamlessly access interim and real time data – a key factor that CCDS builders should include in their architecture.

The key principles guiding CORE's work include:

- Information as "flashlight": The multiple measures data system is designed to help school communities identify strengths to build upon and challenges to address, combined with supports and interventions that focus on building schools' capacity through peer learning and collaborative action.
- Making all students visible: At the heart of the data system is a focus on eliminating disparity and disproportionality. Results for any student group with 20 or more students are highlighted.
- From a narrow focus to a holistic approach: The data system contains a broad range of measures, including academic, social-emotional, and culture-climate indicators.
- From just achievement, to achievement and growth: The data system includes measures of individual student growth over time on state assessments in English Language Arts and Mathematics.

A central focus for the CORE Data Collaborative's school quality improvement work has been the development of a series of improvement measures that combine both state and local data collections. One such measure is a High School Readiness Indicator, which lets a school know the percentage of its 8th graders who have a GPA of 2.5 or better; no Ds or Fs in English language arts or math; attendance of 96 percent or better; and no suspensions. The analyzed data identifies the students most at risk of not graduating as they enter high school, informing educators about interventions and assistance that must be provided for those students to succeed. This information also helps local officials evaluate progress over time.

Another improvement measure enables local staff to connect the results of school culture/climate survey results to student achievement. The surveys assess student, teacher, staff, and parent perceptions of teaching and learning, interpersonal relationships, safety, and school-community engagement.

As of Fall 2019, CORE provided these data and analytical services to districts and county offices representing about half of the state’s K-12 students, on a fee-for-service basis. While that provides an enhanced capacity to support continuous improvement – beyond the support the State of California currently is able to provide – it, of course, leaves half the state’s students, and more than half of school districts, without the same quality of access to data and to meaningful analytics. Developing a state plan for providing such services to all districts would not only provide an essential tool for improvement, but simultaneously address the inequity which has evolved from disparity of information and resources.

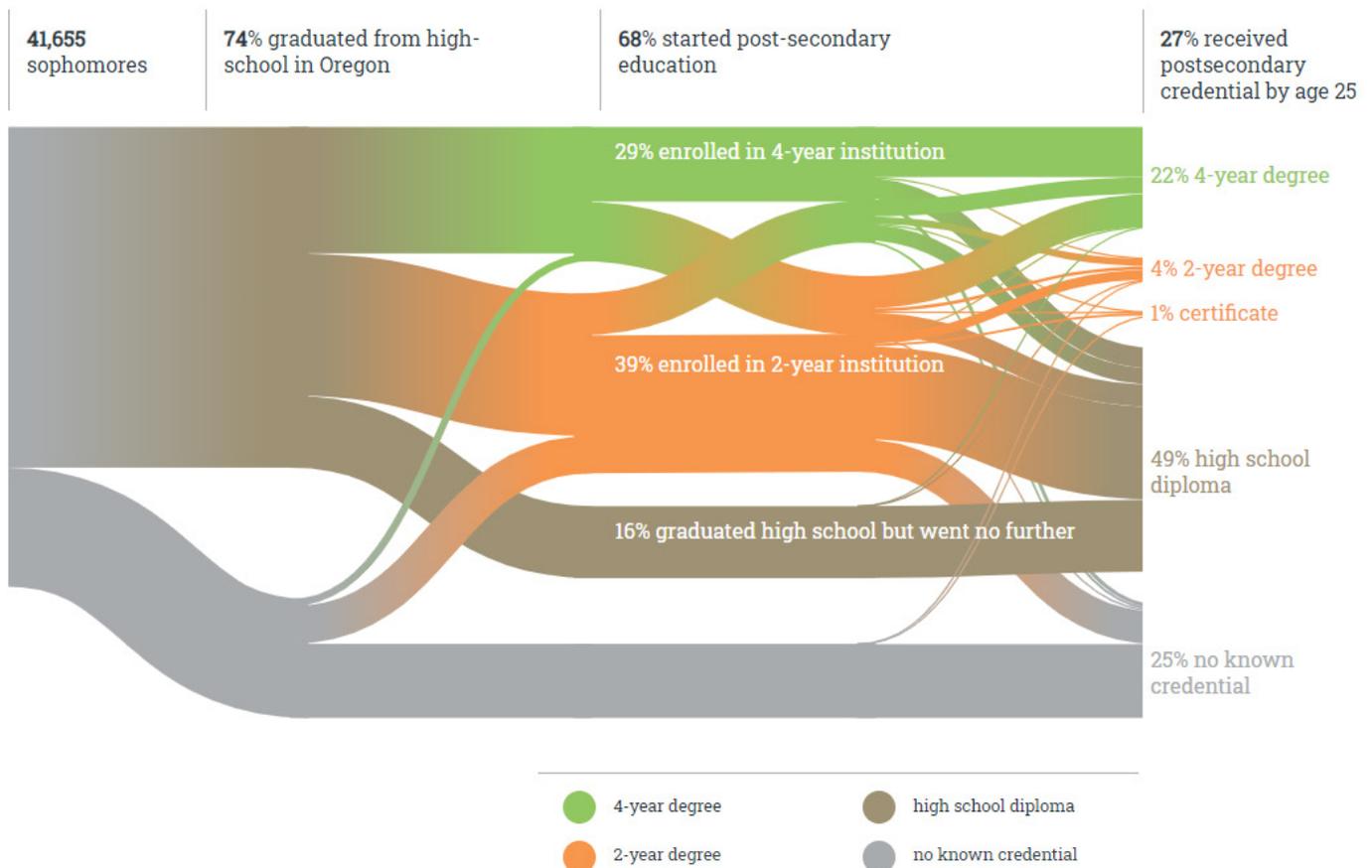
EXAMPLE

In Oregon, State Creates Tool to Support Local Analyses

The state of Oregon created a data system that tracks pathways for students beginning in grade 9 and continuing through secondary and postsecondary systems. The diagram shown here, and the underlying data, have provided evidence that Oregon is dramatically falling short in its aspirations for student completion of studies and credentials – both in high school and beyond. State leaders used this cross-segmental data to document challenges in achieving its postsecondary success goals and to set statewide goals for improvement.⁴ These data, which are part of the state’s education redesign initiative, Oregon Learns, also are now available for the public to access and filter based on their interests, enabling local leaders and state advocates to compare local school and subgroup results to the state averages and its aspirational goals.

Figure 2: Oregon enables school leaders to see student pathways from 9th grade to age 25.

Image from data.oregonlearns.org/



Integrated Data Systems Facilitate Research and Policymaking

Policymakers and researchers need to investigate critical questions about the experiences of young people and the systems that seek to serve them, and make resource and policy decisions based on this heightened understanding. The CCDS can not only bring together data within one system, it also can provide tools to facilitate and strengthen the quality of data analyses both across systems and within government agencies.

Many researchers in California have attempted to examine student pathways from high school to higher education, but their efforts have been constrained by limited data availability. For example, a 2017 Public Policy Institute of California report entitled *Improving College Pathways in California* looked at student pathways from 9th grade, out of high school, and into the CA Community College and/or CSU systems.⁵ The authors came to the important conclusion that, for the sample of students they looked at, just 30 percent of California 9th graders will earn a bachelor's degree. But given the absence of a longitudinal state data system, the analysis represented just a segment of schools and colleges in California. As a result, the authors could not generate findings for the state as a whole, leaving many important questions unanswered.

Kentucky, by contrast, collects and links data from six partner agencies to look at similar questions statewide. And in Connecticut, the state's Preschool-Through-20-Workforce-and-Information-Network (P20WIN) integrated data system makes possible pathway analyses that start with the youngest children and extend through to workforce participation. California's students would be well-served if similar analytics were possible and the CCDS, as conceived, could eventually allow those to be offered.

EXAMPLE

States Evaluate Programs and Progress Using Cross-Sectional Data

Connecticut Gains Insights into Impact of Preschool Program

Connecticut's P20WIN data system generates reports that provide context on state investments. P20WIN data was used to analyze the impact of the state's \$48 million Preschool Development Grant (PDG) program on kindergarten outcomes.⁶ Using data from the P20WIN system, a new comparative study will examine how PDG enrollment correlates with kindergarten outcomes, including children's kindergarten entry skills, attendance, suspensions from school, on-time promotion, and the age at which children are identified for special education services.

Kentucky Gains Insights by Linking K-12 and Postsecondary Data

Kentucky collects and links data from six education, health, and workforce agencies. That enables state and local leaders to analyze and create interactive displays regarding life outcomes based on different high school experiences, as pictured here.⁷ This data display invites users to compare the postsecondary outcomes of students based on such high school experiences as graduation, completion of a career technical education (CTE) pathway, and taking an Advanced Placement (AP) exam.

Figure 3: Kentucky data relates life outcomes to students' high school experiences

Of 43,774 high school graduates:



CALIFORNIA BEGINS BUILDING ITS CRADLE-TO-CAREER DATA SYSTEM

Today, California is one of only eight states that lack a statewide longitudinal data system that makes data more accessible and useful for individuals, local institutions, and state actors. That will soon change. As noted earlier, the 2019-20 California State Budget included \$10 million for the design and first-phase development of the CCDS, which will connect and manage access to data collected by a wealth of different public agencies. Here, we describe the vision and planning efforts for CCDS that already have begun.

Phase One Gets Underway

At present, a workgroup overseen by the Office of Planning and Research is taking the first steps in the creation of California's CCDS. The deadline for this workgroup completing Phase One of the work is June 2021 – a target being maintained despite the current health crisis – which includes the completion of a comprehensive plan by December 2020 and then the initial steps of implementation within the following six months.

The Vision

Ideally, new informational systems will enable parents and caregivers to better understand how their kids are doing, provide information on and connection to essential services, and facilitate key transitions as children move from childhood to adult life. Young people also will benefit from knowledge developed when local and state officials use statewide data to monitor students' pathways in the education system from early childhood education, through K-12, to college, and into the workplace. For example, the public and policymakers will be able to see and understand the disparities in opportunity that exacerbate the state's achievement gaps. Based on that understanding, local, regional, and statewide actors can address those disparities and improve opportunities for all California students, inclusive of all kinds of circumstances. All of this is consistent with the local, regional, and state efforts – and their outcomes – that we have described above.

For the CCDS to live up to its potential and truly serve the interests of California's children and youth, its developers need to do two things early on:

1. Consider the needs and opportunities for a broad spectrum of users, from the parent who wants to find the best school for their child, to the university president wanting to understand the difference a program makes for students after college graduation.
2. Identify the best place to start in a process that is complex, at times political, and likely to take several years; set priorities for the longer-term effort needed to complete the system; and determine the pace at which that can and should occur.

The State's Initial Priorities

State leaders, through legislation and consistent with extensive policy research, have set out key priorities that are guiding the state's initial approach and workplan. Those include three overarching and largely technical issues:

- Linking existing information in the system;
- Guaranteeing privacy and security; and
- Assuring the quality and reliability of education data.

The charge to state leaders, however, also emphasizes the usefulness of the data for several audiences, broadly defined as:

- Students and families, so they have information to guide their educational decision-making.
- Local educators, including classroom teachers and site leaders, to serve the needs of individual students and monitor their progress.
- Education officials from PreK-20, as well as community and business leaders, so they have the information and skills to leverage data for improvement in local policies and practice.
- Researchers and policymakers, so they can conduct analyses that address critical questions about the experiences of young people.

The legislation creating the CCDS also included specific topics the system must be able to address, which are detailed below.

Topics the State Data System Must Be Able to Address

- The impact of early education on student success and achievement as a student progresses through education segments and the workforce.
- The long-term effect of state intervention programs and targeted resource allocations in primary education.
- How prepared high school pupils are to succeed in college.
- How long it takes students who transfer from community college to the University of California (UC), CSU, or other four-year postsecondary institution to graduate with a bachelor's degree.
- College access, completion, and long-term effects of access to state financial aid.
- Workforce effect of graduation from high school, community college, and four-year postsecondary institutions.

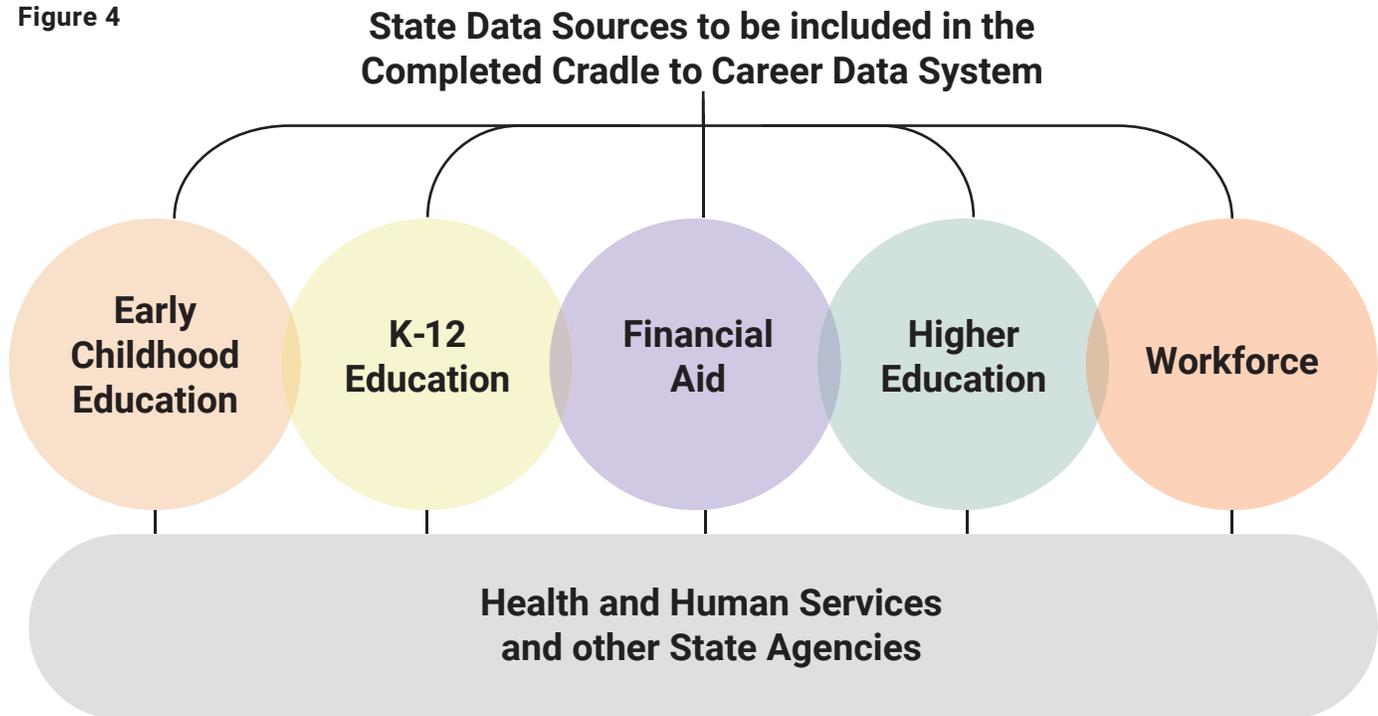
Education Code CHAPTER 8.5. California Cradle-to-Career Data System Act. Section 10856.

These legislative and budgetary parameters establish the foundation for a statewide data system. At the same time, this moment presents the optimal opportunity to envision and create something more, that can emulate the best systems and practices, such as those already described here, and meet a richly diverse set of needs that can bring families, educators, health and welfare service providers, policymakers, and the broader community into an effort to improve the lives of California children.

First, the Cradle-to-Career Data System Must Integrate What Exists

Describing the CCDS is challenging even when the ambitions for it are clearly laid out. Perhaps the best place to start is by acknowledging that this is not envisioned as a single data set, centrally managed, that will be all things to all people. Initial discussions of the CCDS's formal workgroup are embracing the concept of a data network or "ecosystem" that is made up of several different data sources (maintained by the state agencies listed in Figure 4, below), has multiple points of access, and ideally will exist in service to a wide variety of users.

Figure 4



The first phase of the data system, as described in the box on page 4, will include only a subset of these data sources. In particular, the data currently available for ECE is limited; a separate process exists for grappling with that. The extent to which Health and Human Services Agency (HHS) data and other data outside of education will be incorporated in the first 18 months also remains unclear.

The key to the efficacy and accuracy of CCDS, in every phase, will be the ability to track individual students' paths through the various state systems. Currently, the K-12 system does this through CALPADS, using a Statewide Student Identifier (SSID), which is assigned to each student when they enter any California public school and follows them until they graduate or leave the system. Each student record includes multiple kinds of information, such as the students' background and where they attended school. Each of the public higher education systems, along with private postsecondary institutions, also has its own methods for identifying individual students. These do not map to each other or to the K-12 system; therefore, a core task in the development of the CCDS is to align definitions and match records so it will be possible to follow California's students as they move through multiple systems and ultimately into the workforce.

Separately, HHS oversees the administration of the state's largest public benefit programs, including Medi-Cal; CalWORKS; CalFresh; Child Welfare; Developmental Services; Women, Infants & Children (WIC); Family Planning, Access, Care and Treatment (FPACT); and In Home Supportive Services (IHSS). It is common for a client of one program to also receive services from one or more other programs. To make its operations more efficient and client centered, HHS is in the process of developing a data system that is longitudinal and links client information across all its programs. Once the HHS data is ready for integration, this client information could be mapped to the SSID and higher education identifiers.

In addition, the California Department of Social Services, in partnership with counties, has created the CalWORKS Outcomes and Accountability Review (Cal-OAR) Dashboard, which is a local, data-driven program management system that facilitates continuous improvement of county CalWORKS programs. The goal of the dashboard is to provide county and other partners with the information needed to understand, analyze and interpret the Cal-OAR performance measures, as well as [act as] a program management tool for counties. The dashboard was launched in 2019 with an initial set of data and there are plans for data expansion, including education-related measures.

The Cradle-to-Career Data System Design Process

During Phase One of the CCDS development, the Governor's Office, with support from WestEd, is leading a design process slated to take 18 months, from January 2020 to July 2021. The process is using a three-pronged committee structure.

Workgroup – made up of representatives from a variety of offices and state agencies – including K-12 education, both public and private postsecondary systems, plus various health, human services and technical departments – and charged with making recommendations to the Governor's Office.

Advisory Groups – the means by which the public, represented by a broad range of stakeholder groups, is offering recommendations to the workgroup. There are two advisory groups, one focused on "Policy and Analytics" and the other focused on "Practice and Operations."

Sub-Committees – sub-committees consists of representatives from the partner entities, and in some cases practitioners and data experts. They will provide recommendations to the workgroup and also create the work products necessary for Phase One implementation. The sub-committees have been designated to work on the following tasks:

- Common identifiers that will be used to link student records across partner entities.
- Technical data definitions for the key information that will be shared in Phase One.
- Legal considerations, including contracts to support data sharing and protect privacy.
- Research agenda to identify parameters for research on the priority areas specified in the legislation. This sub-committee includes representatives from research and advocacy groups.
- Technology and security specifications and requirements to address data structures and privacy considerations.

PRINCIPLES OF EQUITY, DATA QUALITY, AND BROAD, SECURE ACCESS SHOULD GUIDE DECISION-MAKING

The theory of action guiding the workgroup is that Phase One of the system's development needs to include "public-facing products" that validate the effort and illustrate its potential. Some are concerned, however, that decisions related to creating "early wins" could, while establishing a firm foothold, preclude consideration of valuable but more complex purposes or products. Furthermore, as the work proceeds, a number of additional issues will inevitably emerge; the extent to which the workgroup and other responsible parties thoughtfully address them, and who influences the decisions, will be instrumental in shaping the data system in both the short- and long-term. Keeping the following core principles at the center of the discussion can help to ensure that the richest possibilities remain open to consideration throughout the process.

Equity Must be at the Heart of the System

The enabling legislation and much of the discussion regarding the data system mentions the goal of greater transparency and richer information in order to identify the gaps in opportunity and achievement that young people experience. Equity issues can only be addressed effectively, however, if communities and families of underserved students – and the students themselves – are actively engaged in deliberations about the design and functionality of public-facing data. These decisions cannot and should not be crafted solely by agencies and those closest to this work; they must be grounded in the authentic needs and realities of those the system proports to serve.

What capabilities and characteristics of the CCDS are essential for shining a light on the opportunities and disparities that exist for students?

- 1. The Way that Data Elements are Defined.** In January 2020, members of the Policy and Analytics Advisory Group⁸ focused on the importance of information related to equity, such as:
 - Student characteristics including race/ethnicity, family income, and first-generation status.
 - Clearer and consistent definitions are needed for many of these categories, to ensure consistency. For example, data already is disaggregated by student race; but several groups say it could be done better, for example, by identifying and reporting various subgroups within the current category of “Asian.”
 - Analyses by education institution and by region.
 - Analyses that examine differences in both access and success.
- 2. The Ability to Compare Different Students’ Access to Educational Opportunities.** Common data definitions, equity-minded decisions about the system’s data elements, and improved data quality could enable state officials and researchers to answer many questions about the education system writ large. Differences in course offerings and teacher qualifications among California’s public schools are just two examples of meaningful data comparisons.
- 3. Improved Data for Integration of Services.** More and better data is needed to serve individual students and to evaluate their schools’ progress in serving vulnerable populations, such as students facing homelessness, or those in the foster care system. The state’s new approach to matching foster care and K-12 records provides an example of what is possible. It also demonstrates the importance of eventually tying HHS data into the CCDS and facilitating local capacity to do the same.
- 4. Data Tools.** Tools such as a customizable query mechanism would put the power of data comparisons into the hands of local leaders. The CORE Data Collaborative⁹, for example, reports that district leaders’ ability to identify and analyze similar schools and districts that experience different student outcomes is instrumental in the process of driving local continuous improvement. The Georgia Schools Like Mine tool¹⁰ provides an example of how simple and fast such comparisons can be, if providing that capability is acknowledged to be important.

The System Must be Trustworthy in Order to Protect and Serve Children and Families

Another critical aspect of an integrated data system is that it must be trustworthy, both for those whose data are contained within it and for those who use it. Trustworthiness is a function of accurate data, consistent data, and security of data within the system.

Data Quality: Accuracy and Reliability

Accurate data are essential if stakeholders are going to be able to trust and use them in support of children. The fundamental reliability of the data begins with data entry itself, which is in turn dependent on accurate efforts by thousands of people in schools and other institutions throughout the state. The state can establish some systems to support accuracy, but this must be a continual effort, and it may be difficult to determine a threshold for when 'sufficient accuracy' has been achieved. As Paige Kowalski of the DQC put it, "Data quality is a process, not a destination."

In contrast to many other states, California's K-12 system allows local education agencies to hire the student information system vendor of their choice. This leads to tremendous variability – for example, of the data elements and standards incorporated – in the systems they use to collect and report data to the CDE. That variability could increase when one envisions that the CCDS also will include data systems of four different higher education segments (the community colleges, CSU, UC, and private institutions), the financial aid structure, ECE, workforce agencies, and, eventually, HHS.

What steps can and will be taken to work toward a high level of quality and consistency for source data, particularly when it is coming from multiple organizations and systems? And, accepting that data is never perfect, what strategies need to be in place to continually improve the information the data system creates?

In an April 2019 policy document¹¹, the Education Commission of the States shared this advice: "Take advantage of external resources to make state data systems more interoperable. State leaders do not have to start from scratch. The U.S. Department of Education's National Center for Education Statistics oversees a growing list of Common Education Data Standards, a set of common education data elements that facilitate the exchange of data within and among states. Similarly, the nonprofit Ed-Fi Alliance offers a set of data rules and definitions that 'allow... education data systems to connect.' Such resources can make it easier for systems to talk with each other and more quickly generate insights to inform decisions."

DQC also underscores the relationship between data use and data quality in its 2009 report: "Greater access to and use of data lead to increased data quality as well. When data were just reported up the chain of command to check the 'compliance box,' there was little incentive or reason to be concerned about the quality of the data. Now everyone has a vested interest in the accuracy of the data, especially because information is reported back to local schools to be used."

The central question is the extent to which the CCDS Workgroup, and ultimately the Governor's Office, will take on the political battles to support data quality and consistency. For example, will state leaders be willing to set mandatory standards or create meaningful incentives that will cause the various data system vendors to adopt more uniform policies and procedures? Such policies also can help improve the quality and consistency of data that local agencies input by removing ambiguities and clarifying expectations. Doing so can help improve data quality while not mandating that agencies all use the same data service provider.

Security and Privacy

The other aspect of making the data system trustworthy is to ensure that it protects individual privacy. Indeed, privacy and the related legal requirements were front and center in the legislation and are also central to the development work. The Legal and Technical-and-Security sub-committees of the CCDS Workgroup both have this as a specific charge. Key considerations include protecting against unauthorized access and safeguarding sensitive information. Numerous strategies to achieve these goals are being discussed, including clear protocols on data access at multiple levels of the system, de-identifying data early in the integration process and ensuring data is only displayed if the group size is large enough to mask data for any particular individual. To date, the architects of CCDS have demonstrated that they fully understand the gravity of these issues and the need to effectively address them to build and maintain public trust.

Design with Data Use as a Central Consideration, and Review Current Systems Accordingly

In a February 2020 policy brief, the CORE Districts conclude, “A data system, on its own, is not sufficient to instigate action. User-friendly tools that inspire investigation and that support effective communication must be layered on top of the data system.”¹²

For education practitioners, parents, and community members, well-designed dashboards and other tools can help turn complex data into information that is understandable and actionable. One challenge California faces is that state agencies already have a multitude of online data tools. Many were created a decade or more ago, are isolated by segment, and often do not take advantage of the kinds of query and display technologies, and resulting capabilities, available today. Even some of the more recent tools suffer from limitations. A good query tool and revamped design could dramatically change the usability and value of some of these resources. The CCDS Workgroup has identified query tools as an important topic for its work and one that can and should be informed by the needs of users. It is not yet clear whether improving existing data resources will be an area of focus and investment in the near term, but existing tools that could be improved to meet contemporary needs include:

DataQuest. The DataQuest website (<https://data1.cde.ca.gov/dataquest/>), run by CDE, is the most prominent source of data for local leaders. It is an ambitious attempt to share data but ends up limiting user options and accessibility. DataQuest is a rich online repository of information derived largely from CALPADS and sophisticated data users are able to download data files they can analyze. However, accessibility severely limits its utility for less sophisticated users.

DataQuest users can access pre-defined reports, for a single year at a time, and generally can manipulate only one variable or category thereof. One can find out, for example, how many administrators were in the Fresno Unified School District in 2018-19 and look at how many worked in each of the district’s schools that year. One cannot, however, go to a single display to see how that figure has changed over time. Nor can one derive a pupil/administrator ratio, which would inform an understanding of how administrators are distributed in that district based on school size and student need. Further, the data access on DataQuest is geographically bounded. One can look up a county, school district, or school, but cannot easily compare the number of counselors in a high school in Fresno to a similar high school in Bakersfield.

Education Data Partnership. The Ed-Data Partnership, which was started in the 1990s, is under the purview of California School Information Services/ Fiscal Crisis Management Assistance Team. It provides school district financial data that is unavailable elsewhere. It also has a fairly strong query system built into its comparison reports and provides calculations, such as teacher-pupil ratios and trends over time, that are not available on DataQuest. However, the site (www.ed-data.org) does not have the same depth of data as DataQuest and faces other resource and political constraints.

California School Dashboard and the School Accountability Report Cards (SARCs). When it comes to data for parents, California currently has two different “report cards.” Both put a focus on data for accountability, but neither fully supports the kinds of improvement efforts that tend to be parents’ highest interests related to data use. The Dashboard is the newest and provides both school and district level information in a graphic format. Optimized for mobile phones, it is often positioned as an online resource for parents; but its content is limited to annual accountability data. California’s Local Control Funding Formula and the federal Every Student Succeeds Act included expectations regarding data reporting to parents that have driven the creation of this “report card.”

SARCs are still required in California by law and look essentially the same as they did 15 years ago. Visit <https://www.sarconline.org/> to look up a school. SARCs provide some of the same information as the Dashboard, but also include comprehensive information about teacher assignments, course offerings, and services available at the school.

DQC conducts an annual review of state report cards with a focus on the strategies that make them accessible to parents (<https://dataqualitycampaign.org/showmethedata/>). Their list includes mobile access, translations into languages other than English, and prioritizing design and language that ensure the information provided is understandable and actionable. The data elements they emphasize include student achievement, school climate, student pathways after graduation, and teacher qualifications. Neither of California's accountability report cards hit the mark on all of these elements.

PLANNING FOR THE LONG-TERM MUST ADDRESS ECE DATA, LOCAL INTEGRATION, AND USER CAPACITY

During Phase One of the CCDS development, the workgroup also will be setting California on a long-term data path. Many aspects of the system will continue to evolve, but the decisions made before December 2020 will determine much of what comes later. This highlights three compelling issues that must be addressed in the earliest stages of the work. First, the nascent data system for ECE must be part of the thinking. Second, even as the state data system comes online, there needs to be a plan for the integration of existing and new local and regional data initiatives.

Finally, state leaders need to acknowledge that the hopes for the system to support continuous improvement ultimately hinge on improving the capacity of local educators to access and understand the data, a capacity that currently falls far short of needs.

The State Must Aggressively Pursue the Integration of ECE Data

As described above, California's K-12 and higher education data systems are not yet connected but each contains a cohesive data system at some level. The ECE system stands in stark contrast to that.

The *Getting Down to Facts II* research brief on ECE described the situation this way: "California currently has no system for tracking data on staffing, children, or programs. Most data collection is left to local communities, which is inefficient and fails to provide statewide information. Because of [the system's] fragmentation, it is impossible to determine accurately the qualifications and characteristics of the people caring for children, where California's young children receive care, how many attend each type of program, and how many are enrolled in more than one program."¹³

If the state is serious about understanding how it is serving children from cradle to career, the ECE data system is a critical piece that is missing and must be incorporated into the vision. However, the current status of ECE data should not hold up this first stage of development for the data system as a whole.

Here, as in other education systems, dynamic tension exists between the needs of local providers related to their practice and the needs of the state for the purposes of policy and evaluation. Work is underway to sort through the priorities, evaluate the ECE data sets the state currently collects, and decide on both short- and long-term objectives.

EXAMPLE

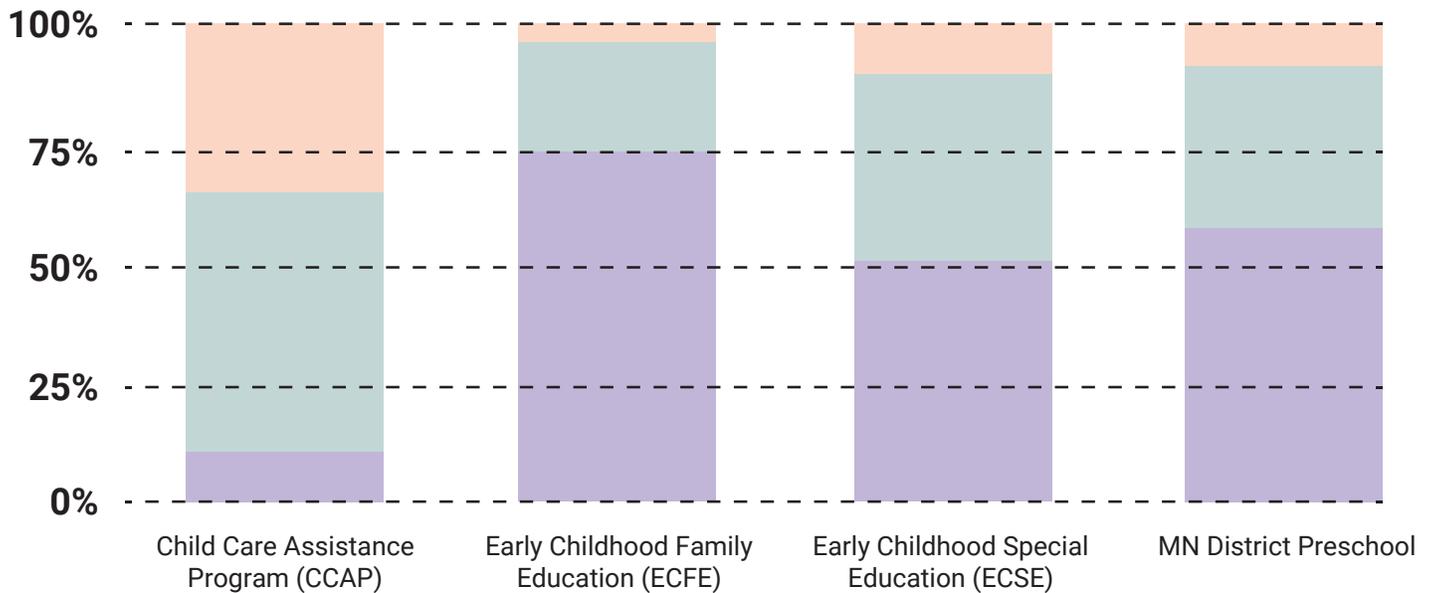
Minnesota's Early Child Data System Illustrates Possibilities

Minnesota's state-run website provides group-level data across a wide spectrum of indicators, ranging from parent education levels to third-grade proficiency differentiated by characteristics such as birth weight. The information is presented in prepopulated tables and geographic maps. The figure here, for example, documents the relationship between preschool settings and food assistance.

Figure 5

2018 Total Kindergartners = 67,994

NOTE: ECLDS will fully represent ECFE participants after June 2020.



The State Data System Must Work in Tandem with Local and Regional Systems

In a state as large and diverse as California it is unrealistic to assume that state agencies can effectively manage and control every aspect of data sharing, access, interpretation, and reporting. It will be important to be clear about the appropriate roles for the state, and state-level entities, to play, particularly when local use of data is such an important priority.

What will be the roles for the various state agencies – and the CCDS governance entity – in working with the plethora of local data collaboratives, public users, and private researchers already operating in California? The Education Commission of the States provides some perspective:¹⁴ “It is up to state leaders to ensure that data systems serve the needs of the people involved – students, families, community members, teachers and leaders – rather than narrow, bureaucratic mandates.”

The state can learn from the CORE District Data Collaborative, which has amply demonstrated the value of more responsive data interpretation and reporting. CORE has created the system by building up from the needs of participating local districts and their individual data submissions. They recognize that local users interested in improving their practice depend heavily on real-time data, something that cannot reasonably be provided from the state level. In their February 2020 report¹⁵, they urge that the statewide data system integrate with or seamlessly complement local data systems.

In Natomas Unified School District (USD) in Sacramento County, for example, district leaders combine data provided by the CORE Data Collaborative with local metrics in order to put together a robust District Progress Report¹⁶. This effort began in earnest in 2012 in Natomas USD. The district now has a data reporting system with 300+ metrics to inform teachers, site leaders, and district leaders about student performance and progress.

A large number of regional data collaboratives also have put together cross-sector partnerships, as described in a January 2018 report by EdInsights¹⁷, in which they concluded: “Stakeholders ... envision continuing their regional efforts, despite the challenges, in order to share more detailed information about local programs that would not be included in a statewide data system, and to provide a forum for institutions to meet and discuss the implications of cross-sector data analyses to improve their programs and student outcomes...”

CCDS architects need to fully understand the various ways that a local school district like Natomas USD, and CORE or regional collaborations, have tackled and met their specific data needs in the absence of a statewide data system. What problems have these various efforts effectively solved and what solutions have the local practitioners crafted? How would their work be made easier, less expensive, and/or better if the CCDS were in place? Going forward, to what extent should the state support these local and regional efforts and in what way?

Natomas USD Publishes Its Progress Report Twice a Year

District leaders in Natomas Unified School District combine data provided by the CORE Data Collaborative with local metrics in order to put together a robust District Progress Report. This extensive report provides a snapshot of current data, as well as progress over time. For each metric, a description is provided along with a target and some of the current actions to reach that target. In addition, the report uses local, regional, and state comparisons to provide context. All of the metrics are updated, and the report is formally presented to the school board, district officials, and site leaders twice a year.

The district’s cloud-based, real-time reporting system includes 300+ metrics used to inform teachers, site leaders, and district leaders about student performance and progress. The full, 35-page District Progress Report is available at <https://natomasunified.org/dpr/>.

Capacity Building Can’t be an Afterthought if Continuous Improvement is the Goal

A big part of the CCDS vision is that data will be accessible to and useful for local educators and officials charged with continuously improving the opportunities they provide to children and young people. That assumes they have the capacity for data analysis and use, an assumption that many say is incorrect.

School districts often lack the expertise needed to use data as part of continuous improvement efforts. They may have a data or assessment system manager without an education background – who is being called upon to interpret the educational meaning behind the data. Conversely, an assessment director may have the educational background but little understanding of data analysis. And the smaller the school district, the less likely it is to have sufficient depth in both areas.

In response to these conditions, at the Sacramento County Office of Education, the Center for Student Assessment and Program Accountability helps schools and districts understand data related to state assessment and accountability. Rachel Perry, the county office's executive director of research and evaluation, finds that many district and school administrators, especially from small- or medium-sized districts, are unsure about how to access data, but more importantly they lack sufficient knowledge, skills, training, and support to deeply analyze the data that they do access.

"Success in data analysis is all about asking the right questions and this is an area where administrators need help," Perry said. "Supporting districts in using data is a substantial part of our team's work with school districts through the Differentiated Assistance process. Administrators don't report having too little data to analyze; their opinion is more like they are drowning in data but don't know what to look at or how to analyze it."

Drawing on their experiences since 2010, the CORE Districts emphasize that "educators and administrators need high-quality professional learning opportunities in order to make use of data for improvement." In their February 2020 report they describe their extensive efforts working with teams of educators to coach them on how to reflect upon current and historical data, use predictive analytics, modify their practice, and then test whether they have achieved the desired results.

To what extent will the work on the CCDS include attention to the myriad issues of local capacity to use data, particularly among K-12 schools and districts? Additionally, can the California System of Support – made up of county offices, CDE officials, and the California Collaborative for Educational Excellence – play a role in both identifying and addressing the capacity needs?

CONCLUSION: A FOUNDATION FOR IMPROVEMENT – AN OPPORTUNITY TO PARTICIPATE

The Governor's Office, with support from WestEd, is leading the work to develop Phase One of California's Cradle-to-Career Data System. By January 1, 2021, the CCDS Workgroup and its various advisory groups and sub-committees will be recommending the basic shape that California's education data system will take and then, in the six months following, complete specifications for its implementation.

Their work will establish the infrastructure for an integrated education data system that has been on many stakeholders' wish lists for decades. Although the actual implementation of the system will take time and evolve as experience dictates, this initial design process will set the course.

This undertaking is complex and will undoubtedly face moments of contention as multiple interests express their priorities. Recognizing that, we believe that the process will be strongest if the principles presented in this brief help guide it. Those principles include:

- Keeping equity of student opportunities and outcomes as the most important priority.
- Ensuring trustworthiness of the system in order to protect and serve children and families.
- Maintaining data access and use as an integral requirement, including improvement of the data systems that now exist.

The eventual integration of an ECE data system also must remain front and center in the thinking of the CCDS architects.

Finally, the CCDS Workgroup and the Governor's Office must keep their eye on the theory of action that has driven much of the support for this data system. The assumption is that better information will enable local educators, higher education leaders, and service providers to continuously identify opportunities to improve what they are doing to support California's young people. To that end, a crucial question is "If we build it, will they come?" The answer to that will only be a yes if the CCDS process and actors pay attention to:

- Helping local and regional leaders integrate the state data with their own local, real-time data systems, including those already in place; and
- The critical need to build the capacity of educators, community members, and parents so that they can use the data well.

The deliberations of the CCDS are happening in public. Consistent with the provisions in the enabling law, advisory groups will be convened quarterly to provide stakeholders' perspectives. In addition, time for public comment will be set aside at each meeting. The box below includes information about the overall meeting schedule and how to stay informed regarding agendas and proceedings.

Make sure data counts for kids in California. 2020 is the time to speak up for their needs and yours.

Schedule for Cradle-to-Career Data System Development and Opportunities for Public Input

Basic workplan for the CCDS Workgroup (as of January 2020)

- January-April 2020: Develop the vision and identify initial public-facing projects for Phase One.
- May-August 2020: Determine governance structure
- September-December 2020: Develop MOU/legal framework

Important Deadlines:

- January 1, 2021 - Report to Department of Finance and Legislature recommended process for CCDS development.
- July 2021 – Completion of specifications for Phase One implementation.

Opportunities for public engagement and input

- All committee meetings are open to the public, either in person or via a broadcast. Visit <https://cadatasystem.wested.org/> for meeting dates, topics, and agendas. Copies of documents referenced at the meetings, PowerPoint presentations, and meeting notes also are posted under the Meeting Information tab.
- Learn about what will be discussed in each meeting here.
- With advance notice, members of the public can address the various groups during their meetings, either in person or in writing. Information about that process can be found here: <https://cadatasystem.wested.org/> contact.
- Sign up for notifications of meetings here: <https://cadatasystem.wested.org/listserv>

ENDNOTES

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RESOURCES OF GENERAL INTEREST

The Data Quality Campaign (DQC) is the nation's leading voice on education data policy and use. Its website includes a wealth of resources related to state's efforts to change policy and practice in order to use data to improve education outcomes: <https://dataqualitycampaign.org/>

The CORE Districts and Data Collaborative empower educators with meaningful improvement data and research. As described on their website, they have created a data and analytics infrastructure that empowers schools and districts to practice continuous improvement: <https://coredistricts.org/our-work/improvement-communities/data-collaborative-community/>

Intersegmental Data Partnerships Resource Guide, published by PACE, highlights success stories from a wealth of partnerships operating throughout California. The guide presents a framework for such partnerships that raises important issues the state should consider as it grapples with how to best support both local and regional intersegmental efforts: <https://edpolicyinca.org/publications/intersegmental-partnerships-and-data-sharing>

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