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Harnessing the Potential of Statewide Longitudinal Data Systems to Support College and Career Readiness

Introduction

Student data are a rich and increasingly common source of information for assessing and improving the impact of educational priorities, initiatives, and investments. State longitudinal data systems (SLDS) are designed to house these data and to provide user-friendly strategies for maintaining longitudinal data and using data to inform decisions about policy, resource allocation, and strategies at the state, district, and school levels. Spurred by federal funding opportunities since 2006, SLDS across the country have expanded and evolved with regard to the breadth and quality of state-collected student data (especially college and career readiness [CCR] measures[1]), as well as states' ability to use these data systematically to identify needs and assess progress of the education system as a whole. In particular, states use SLDS and student data to support efforts to ensure that all students are college and career ready. Indeed, the use of SLDS allows states to specifically measure progress toward college and career readiness goals through CCR-related accountability benchmarks and to develop supports and information for district- and school-level stakeholders as they work toward ensuring that students meet CCR standards.

This brief examines strategies for leveraging SLDS to promote CCR goals. The examples provided are based on current state efforts to use their state longitudinal data systems to achieve their CCR vision and goals.[2] The following information outlines the basic purpose and elements of SLDS and describes a set of emerging practices that serve as examples of how states use SLDS to support CCR. This information may be useful to states that are currently reexamining these efforts in light of the Every Student Succeeds Act (ESSA).

> **DEFINING STATEWIDE LONGITUDINAL DATA SYSTEMS**
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> The U.S. Department of Education (2009) defines *statewide longitudinal data systems* as PK–20 systems designed to capture, analyze, and use student data from preschool to high school, college, and the workforce.

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[1] Previous performance data collected by states (mainly student achievement and attendance records) were limited in their ability to measure students' college and career readiness.

[2] Please note that the terms *CCR goals* and *CCR efforts* are used throughout this brief to refer to states' individually defined priorities with regard to college and career readiness.

Using State Longitudinal Data Systems to Support College and Career Readiness

The purpose of an SLDS is to help states draw connections among different types of data to gain a broader picture of student, school, and district performance. SLDS offer a potentially powerful tool for states to observe trends among and assess the needs of students, schools, and districts over time, and potentially beyond the K–12 system, by connecting to postsecondary education and even workforce data systems. Indeed, the U.S. Department of Education (2009) noted that one of the key purposes of an SLDS is to enable states to "…capture data on students from one grade to the next, measuring whether they are on track to graduate and telling K–12 schools whether they are preparing their students to succeed in college and the workforce." Capturing multiple snapshots over time through an SLDS can enable states to observe trends in the prekindergarten, K–12, postsecondary, and workforce systems, and subsequently to develop and refine policies that allocate resources to address gaps identified in student progress and performance.

College and Career Readiness Data Elements

State longitudinal data systems contain a substantial amount of student-level data, which are collected over the course of students' educational careers. Although the specific types of data housed by SLDS are determined by individual states, there are some core elements, as stipulated by the U.S. Department of Education (ED) (2009):

- A unique identifier for every student that does not permit a student to be individually identified
- The school enrollment history, demographic characteristics, and program participation record of every student
- Information on when a student enrolls, transfers, drops out, or graduates from a school
- Students' scores on tests required by the Elementary and Secondary Education Act (ESEA)
- Information on students who are not tested, by grade and subject
- Students' scores on tests that measure whether they are ready for college

- A way to identify teachers and match them with their students

- Information from students' transcripts—specifically, courses taken and grades earned

- Data on students' success in college, including whether they enrolled in remedial courses

- Data on whether K–12 students are prepared to succeed in college

- A system of auditing data for quality, validity, and reliability

- The ability to share data from preschool through postsecondary education data systems

In addition to these core elements (which span the PK–20 trajectory), SLDS also may contain a range of other data,[3] particularly CCR-related information such as the following:

- Participation in advanced coursework (e.g., Advanced Placement® [4], Scholastic Aptitude Test [SAT], Career/Vocational Technical Education)

- Early warning data/student preparedness for college and career (as defined by state measures)

- High school graduation rates

- Postsecondary enrollments, transfers, dropouts, and graduations

- Postsecondary course participation and performance (including remedial course participation)

- Postsecondary degrees and certificates earned

- Workforce experiences (e.g., employment status, wages)

States use a variety of strategies to support CCR goals. The following section provides a brief description of some state strategies for growing and harnessing the power of SLDS to support these efforts.

Opportunities and Challenges for Leveraging Statewide Longitudinal Data Systems to Promote College and Career Readiness

An examination of practices related to state uses of SLDS to promote CCR goals demonstrates that states engage in the following activities with regard to their SLDS: Measuring progress toward CCR goals; developing early warning systems for identifying at-risk students, schools, and districts; providing user-friendly information to multiple stakeholders; promoting cross-agency data sharing and systems integration; and, ultimately, improving and refining CCR policy.

Measuring Progress

State longitudinal data systems can promote the inclusion of CCR measures in states' accountability systems and academic targets. The expansion of data systems in states has increased the opportunity for states to collect data that inform measures of CCR. For example, many states are now collecting

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[3] These measures represent merely a fraction of the potential information included in an SLDS. Stakeholders should consult their state's SLDS website or connect with state education agency (SEA) staff or others who are knowledgeable about the SLDS to find out what kind of data are captured in the system.

[4] Advanced Placement® and AP® are trademarks registered and/or owned by the College Board, which was not involved in the production of, and does not endorse, this brief.

information on a wide range of CCR measures through their SLDS, including students' access to and performance in advanced coursework; students' participation in career and technical education (CTE) and other career-focused programs; high school graduation rates; and postsecondary enrollment. Because SLDS house data on these metrics, they are the ideal resource for acquiring information for use in informing accountability determinations and academic targets.[5]

For example, key CCR goals in Florida include improving employment and earnings outcomes for all students. These objectives are included in the state's accountability processes for all parts of the PK–20 system (FLDOE, n.d. a). Some examples of measures used to assess the state's progress toward its CCR goals and accountability targets include high school graduation rates at the district and school levels, postsecondary education enrollment rates, college graduation rates, and earnings by education level among former students (FLDOE, n.d. b).[6]

Early Warning Indicators

A key way in which SLDS can promote CCR is by providing local stakeholders with data to assess individual student, school, or district progress toward CCR goals. These data help educators understand student performance and growth and to adjust instruction accordingly. For example, several SLDS, such as that in Massachusetts, use data from the SLDS to provide an early warning system to districts and schools. The early warning system relies on predictive indicators that identify students who are at risk of missing academic milestones. Montana's SLDS provides school-level data on progress toward achievement of CCR goals. This feedback can enable stakeholders in districts and schools to provide interventions and to implement improvements to help get them back on track.

Access for Stakeholders

State longitudinal data systems offer an opportunity to add value to stakeholders' decisions about CCR needs and priorities. For example, school and district leaders are provided information on students' enrollment and persistence in postsecondary education.

Many SLDS also include tools such as data dashboards, which allow stakeholders to customize data to inform decisions unique to their specific roles. These online platforms each contain a subset of data specific to their users. Through the data dashboards, users can combine and display data components in several ways, allowing them to further tailor SLDS data to meet their roles and needs. For instance, Georgia generates separate data dashboards for district officials, principals, and other school administrators as well as for teachers. Although all three dashboards contain similar information, the teacher dashboard has additional features for displaying student-level data whereas the dashboards for district and school officials are geared toward aggregate displays, such as viewing trends in student performance (Data Quality Campaign, 2013; GADOE, 2016a; GADOE, 2016b). In addition, data dashboards often possess features for generating reports to inform CCR policy by aggregating student performance within and across schools.

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[5] Although SLDS play an important role in informing CCR accountability systems and the different forms of CCR accountability, a lengthy discussion of these connections is beyond the scope of this brief. Please visit the College and Career Readiness and Success Center (2014) website for additional information about this topic.

[6] Note, however, that predictive measures of CCR have thus far not been included in the state's accountability systems.

Still, there are challenges related to stakeholder access, and states have to determine which stakeholder groups have access to SLDS data as well as how much of the information and in what format(s) they are able to view these data. In some states, SLDS data are made available to all relevant stakeholders. Other states restrict access to select groups such as policymakers, administrators, and educators. In some states, SLDS data can be customized by users whereas in other states, SLDS data are aggregated and shared through reports. There are benefits and downsides to each of these approaches. Making SLDS data broadly available to the public can be a burden on state education agencies (SEAs), whose staff have to explain and educate users about the data and how to interpret them. However, widespread sharing of SLDS data can serve as avenues for SEAs to direct local education agency (LEA) efforts toward improving student outcomes and to engage individual LEAs in policy discussions relevant to the issues that they face. These considerations need to be factored into states' communication efforts with regard to stakeholder buy-in.

Another challenge to providing stakeholder access is concern about student privacy. Beyond the federal law[7] on this issue, many states have defined additional rules around education data and student privacy. For example, in 2015, 46 states introduced 182 bills addressing student data privacy. Of those states and bills, 15 states passed 28 new student data privacy laws (Data Quality Campaign, 2015). These policies impact how student-level data (such as those contained within an SLDS) must be stored/secured, accessed, and used. In addition, such legislation influences how states may share such information with outside parties, such as researchers, service providers, and other stakeholders that support a state's CCR work. These privacy concerns are also applicable to workforce data, to which access is further complicated by the fact that it is challenging for states to track information about individuals who enter the workforce in a state where they did not go to school, given that there are few structures in place to support this practice.[8]

Cross-Agency Data Sharing and Systems Integration

States' ability to harness the potential of their SLDS can be significantly enhanced by connecting them to other agency data systems. States vary greatly in terms of how they are organized, but it is possible that many states have separate agencies for early childhood education and care, the K–12 education system, career and technical education, postsecondary education, and the workforce. This separation of agencies may make it easier to focus on the target goals and priorities; nevertheless, it may hamper the ability to observe trends across a student's education and employment trajectory. Thus, some states, such as Florida, have connected these data systems to enhance policymakers' and other stakeholders' use of these data to identify needs within the whole system.

Preparing data systems to be compatible for integration is challenging with respect to time and funding as well as political will for prioritizing cross-agency collaboration. Therefore, states may need to establish written agreements across agencies that identify what data will be shared, how they should be formatted, the timeframe for submission, and an explanation for how those data will be housed securely. All of these efforts can take time.

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7   Family Educational Rights and Privacy Act (FERPA), 1974.

8   A few consortia of states are piloting workforce data-sharing practices that may elicit effective practices for addressing this challenge in the future. See, for example, the Western interstate Commission for Higher Education (WICHE): http://www.wiche.edu/

Emerging SLDS-CCR Practices

In this section, we highlight examples of state approaches[9] to using SLDS to promote CCR goals. The following examples offer a variety of strategies for using SLDS and data use to promote CCR.

Florida: Making Cross-Agency Connections for Usable CCR Data

Florida has a comprehensive SLDS that integrates postsecondary education and workforce data to provide stakeholders with information on school and district progress toward CCR goals.

Florida was one of the first states to link its SLDS to CCR goals, particularly goals focused on improving students' employment and earnings outcomes. Florida's SLDS, known as the PK–20 Education Information Portal, provides groupings of data organized by the following categories:

- **PK–12 Public Schools:** Information on enrollment, fine arts, and high school graduation rates
- **Florida College System:** Information on core courses, developmental education courses, gateway courses, and graduation rates
- **Florida Education and Training Placement Information Program (FETPIP):** Information on employment and earnings outcomes for former students and program participants who graduated, exited, or completed a public education or training program in Florida

Beyond linking the K–12, postsecondary, and workforce data, Florida ensures that these data are usable to a wide range of stakeholders, including educators, parents, and policymakers. Users can download customized reports specific to their needs and interests. In turn, this SLDS is used to identify needs of the education system and to establish priorities over time.

Georgia: Predictive Measures of CCR

Georgia has a single SLDS that all districts use to record student information and performance. This single statewide system provides Georgia and its districts with consistent information about school-level performance toward reaching CCR goals. In 2010, SEA leaders in Georgia began to design an SLDS, called "the tunnel," from the ground up to reflect their belief that preparation for college and career is a personalized journey for every student, starting in kindergarten. The resulting SLDS is available to all Georgia districts that choose to opt in to its use (Data Quality Campaign, 2013; Georgia Department of Education, n.d.).

Within the first year of implementation, all of the state's 181 districts were using the tunnel to store student-level data such as assessments, attendance, enrollment, courses, and grades. The tunnel allows all districts to use common dashboards and measures of CCR (Georgia Department of Education, 2016a; Georgia Department of Education, 2016b). The tunnel also enables teachers

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[9] The state examples in this resource were compiled using publicly available information housed on state websites and the SLDS Grant Program website. The information was then verified by state officials involved in the development and implementation of SLDS in selected states. We identified states for inclusion by (a) conducting a scan of state education agencies' online presence with regard to using SLDS for CCR and (b) including states for which materials and preliminary outcomes for these initiatives were readily available.

and school and district leaders to assess CCR-specific measures through the state-developed College and Career Ready Performance Index (CCRPI), which generates "report cards" of CCR indicators related to predictions for high school graduation (for elementary and middle school students) and post-high school readiness and graduation rates (for high school students). District and school administrators have used these report cards to map students' performance and track their progress toward district-determined CCR goals. Moving forward, SEA leaders continue to improve upon the tunnel by soliciting feedback from stakeholders on an ongoing basis.

Massachusetts: K–12 Early Warning Indicator System for Districts and Schools

Massachusetts uses data from its SLDS to provide district and school leaders and educators with annual risk indicators that identify students who are at risk of missing key educational milestones. The Edwin Analytics SLDS in Massachusetts promotes CCR through a suite of postsecondary reports and its Early Warning Indicator System (EWIS). Leveraging data from the National Student Clearinghouse (NSC) and the Massachusetts Department of Higher Education, several reports in Edwin Analytics provide insight into the postsecondary enrollment, performance, persistence, and degree attainment of Massachusetts' public high school graduates. These reports help educators understand former students' postsecondary outcomes, and they can be generated for all students from a particular graduating class or specific student subgroups.

The Early Warning Indicator System, the other key component of Edwin Analytics, identifies students at risk of not meeting key academic milestones. Since 2012, EWIS data have been available for students in grades 1–12 for milestones across the K–12 trajectory, from reading at grade 3 to graduating high school. As of 2015, EWIS data also include information about high school students at risk of missing college success outcomes, such as postsecondary enrollment and placement in credit-bearing coursework. All of these data help districts and high schools determine the supports and educational experiences that individual students may need to improve their likelihood of success in postsecondary education. In addition to postsecondary reports and EWIS data, Edwin Analytics also links early education, K–12, and higher education data as well as wage records from the Executive Office of Labor and Workforce Development. The inclusion of wage records enables districts to track employment patterns among secondary and postsecondary students.

The extensive reports of aggregate and individual, student-level data in Edwin Analytics are available to state policymakers, district and school administrators, and educators via a secure logon. These data are not used as accountability measures but, rather, as predictive indicators that support educators in identifying students who are at risk and in need of support. In addition, leaders and educators are able to observe trends through aggregate, nonconfidential data on Massachusetts' Profiles Web page and in user-friendly tools, such as the Success After High School DART (District Analysis Review Tool). This tool enables districts and schools to easily track their aggregate performance on various state-identified CCR metrics over time and make comparisons to state averages or other districts and schools.

Montana: Supporting Postsecondary Enrollment and Persistence

Montana has developed a system that allows stakeholders to access data on student enrollment and persistence in postsecondary education, and includes an early warning system that identifies students in high school as being on or off track for college readiness. Since 2012, Montana has been connecting K–12 and postsecondary data to promote CCR efforts in its SLDS, called the *Growth and Enhancement of Montana Students (GEMS).* The College Readiness domain within GEMS houses multiple dashboards of CCR data. For instance, GEMS contains high school-level feedback reports, including college enrollment and remediation rates for students by race or ethnicity, gender, economic status, and additional characteristics. In addition, GEMS tracks data on students' credit hours earned, and there are plans for the SLDS to incorporate retention rates in future feedback reports. GEMS also has a feedback report for the Free Application for Federal Student Aid (FAFSA), which draws on data from the U.S. Department of Education and provides teachers and counselors with a weekly update on the status of each senior's FAFSA and a guide to correcting any errors on their applications. The purpose of this program is to promote postsecondary enrollment. Finally, the SLDS has an interactive early warning system that identifies individual students' probability of dropping out of high school from grade 6 and up using a logistic regression model. The early warning system is updated regularly, enabling school administrators to gain an accurate picture of students' CCR trajectories. Schools can also compare their students' performance on early warning indicators to the state average using school-level reports generated by the early warning system. The SEA is currently working on incorporating college remediation indicators in the early warning system. All of these data are accessible to a variety of users within Montana's K–12 districts and schools, and select data are publicly available. Moving forward, the data governance council has developed a research agenda of key CCR topics to explore using GEMS data in an effort to further enhance the functionality of the SLDS.

Table 1 provides an overview of the key SLDS components of the SLDS-CCR efforts discussed in this section.

Table 1. Key SLDS Components Used by Select States to Promote CCR[10]

State	SLDS Component				
	Measure Progress	**Early Warning Indicators**	**Access for Stakeholders**	**Postsecondary Education Data**	**Cross-Agency SLDS Integration (e.g., Workforce)**
Florida	✓		✓	✓	✓
Georgia	✓	✓[11]	✓	✓	
Massachusetts	✓	✓	✓	✓	
Montana	✓	✓	✓[12]	✓[13]	

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[10] See the CCRS Center's interactive state map for more information about state policies and efforts, such as the use of early warning systems, toward improving college and career readiness outcomes: http://www.ccrscenter.org/ccrs-landscape/state-profile

[11] Some districts in Georgia capture early warning data whereas others do not.

[12] Select data are publicly available in Montana.

[13] Select data are publicly available in Montana.

Conclusion

Although the use of SLDS to promote CCR is still in its early stages, several states have experienced success with such efforts. The emerging practices described in this brief offer ideas for how states can either develop or enhance SLDS in order to better prepare students for college and career. Given widespread federal support for SLDS, states should be well-positioned to leverage opportunities for enhancing CCR through their SLDS.

Resources

- Florida SLDS Homepage: http://www.fldoe.org/accountability/data-sys/statewide-longitudinal-data-sys/

- Florida SLDS (PK–20 Education Information Portal): https://edstats.fldoe.org/SASPortal/public

- Georgia SLDS Homepage: https://www.gadoe.org/Technology-Services/SLDS/Pages/SLDS.aspx

- Georgia College and Career Ready Performance Index: http://www.gadoe.org/CCRPI/Pages/default.aspx

- Montana SLDS (Growth and Enhancement of Montana Students): http://gems.opi.mt.gov/Pages/Default.aspx

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