Forum Guide to

College and Career Readiness Data

National Forum on Education Statistics

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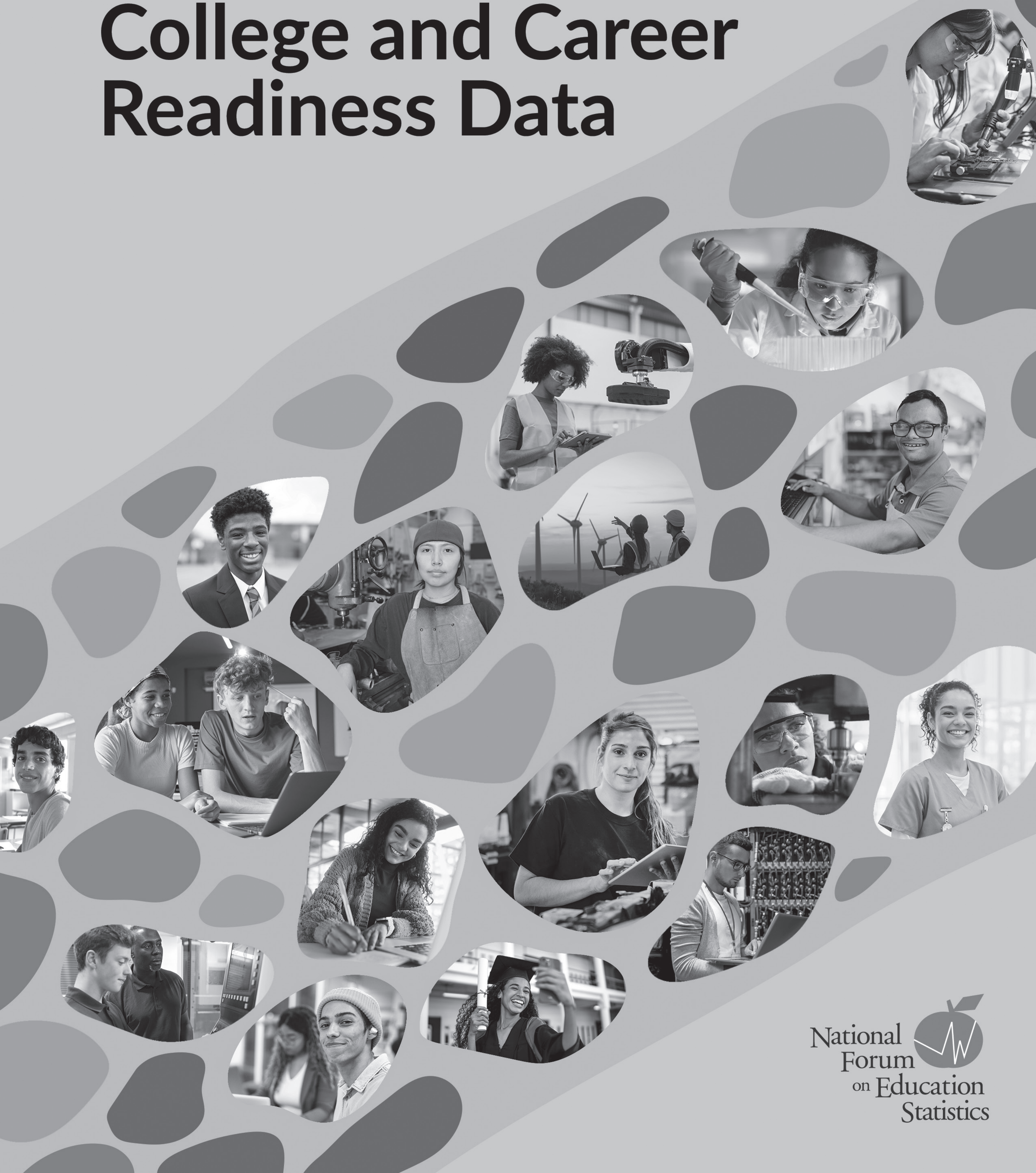

National Forum on Education Statistics

National Cooperative Education Statistics System

The National Center for Education Statistics (NCES) established the National Cooperative Education Statistics System (Cooperative System) to assist in producing and maintaining comparable and uniform information and data on early childhood, elementary, and secondary education. These data are intended to be useful for policymaking at the federal, state, and local levels.

The National Forum on Education Statistics (Forum) is an entity of the Cooperative System and, among its other activities, proposes principles of good practice to assist state and local education agencies (SEAs and LEAs) in meeting this purpose. The Cooperative System and the Forum are supported in these endeavors by resources from NCES.

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Foreword

The Forum is pleased to present the *Forum Guide to College and Career Readiness (CCR) Data*. The purpose of this document is to explore how SEAs and LEAs effectively collect, integrate, report, and use high-quality CCR data to prepare students for the postsecondary and dynamic global workforce. High-quality data in integrated K-12, postsecondary, and workforce data systems are valuable to all CCR stakeholders when they are used to:

- support educators in identifying and addressing student-specific needs;
- measure progress made by education agencies in achieving CCR accountability and continuous improvement goals;
- guide CCR programmatic decisions through the use of postsecondary feedback loops; and
- maximize career opportunities for all students.

This document serves as a practical guide for SEAs and LEAs in determining the types of data, reporting and analysis tools, and data system connections essential to support CCR efforts. It also highlights emerging developments in CCR pathways and data systems.

Publication Objectives

This resource will:

- highlight best practices, important considerations, and emerging needs in the processes of collecting, integrating, reporting, and using CCR data;
- discuss the importance of high-quality CCR data in education and workforce data systems;
- provide insights into the differences between college readiness data and career readiness data;
- examine the evolving landscape of CCR data systems, requirements, and uses;
- identify the types of data, tools, and systems that are needed to effectively support an agency's local, state, and federal CCR reporting;
- explore solutions to and share valuable lessons learned in effectively addressing challenges related to CCR data; and
- provide real-world examples from districts and states that have implemented successful CCR data practices.

Intended Audience

The primary audience for this publication includes education agencies and others with an interest in preparing K-12 students to be college and career ready. SEA and LEA staff who are responsible for the data needed to support or manage CCR efforts and metrics may find this guide especially useful. The higher education and workforce communities also may find this guide helpful as they partner with K-12 agencies in designing and implementing CCR strategies and supporting data systems.

Organization of This Resource

This resource includes the following chapters and appendix:

- **Chapter 1** reviews how CCR approaches and data have changed over time; defines and establishes the roles of CCR data in education data systems; and distinguishes between college readiness data and career readiness data.
- **Chapter 2** discusses best practices, important considerations, and emerging trends in CCR data collection and integration.
- **Chapter 3** highlights best practices, important considerations, and emerging trends in CCR data reporting and use.
- **Chapter 4** features case studies from education agencies about their experiences with CCR data, challenges faced, best practices used, and lessons learned.
- **Appendix A** compiles state CCR definitions.

National Forum on Education Statistics

The work of the Forum is a key aspect of the Cooperative System. The Cooperative System was established to produce and maintain, with the cooperation of the states, comparable and uniform education information and data that are useful for policymaking at the federal, state, and local levels. To assist in meeting this goal, NCES within IES—a part of ED—established the Forum to improve the collection, reporting, and use of elementary and secondary education statistics. The Forum includes approximately 120 representatives from state and local education agencies, the federal government, and other organizations with an interest in education data. The Forum deals with issues in education data policy, sponsors innovations in data collection and reporting, and provides technical assistance to improve state and local data systems.

Development of Forum Products

Members of the Forum establish working groups to develop guides in data-related areas of interest to federal, state, and local education agencies. They are assisted in this work by NCES, but the content comes from the collective experience of working group members who review all products iteratively throughout the development process. After the working group completes the content and reviews the document a final time, the publication is subject to examination by members of the Forum standing committee that sponsors the project. NCES provides final review and, when needed, makes editorial or other edits to ready a product for publication. The information and opinions published in Forum products do not represent the policies or views of ED, IES, or NCES. Readers may modify, customize, or reproduce any or all parts of this document.

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This publication was developed through the Cooperative System and funded by NCES within IES–a part of ED. The College and Career Readiness Data Working Group of the Forum is responsible for the content.

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Contents

Common Terms and Acronyms

ACT: a college readiness assessment administered by ACT, Inc.

ACT WorkKeys: assessments administered by ACT, Inc. that measure the foundational skills required for success in the workplace.[1]

Admissions Processes: the variety of methods by which students are admitted to college, including traditional, early admission, and direct admission. In direct admissions data sharing agreements between local education agencies (LEAs) and higher education institutions, LEAs may provide a postsecondary institution admissions data directly on behalf of students, simplifying the traditional admissions process for students and families.

Advanced Placement (AP): a program created and administered by the College Board that offers college-level curricula and examinations to high school students. Postsecondary institutions may grant college credit to students admitted to their institutions who scored at a certain level on AP examinations. Not all high schools offer AP courses. For a high school course to earn the AP designation, the course must be audited by the College Board to confirm that it satisfies the AP curriculum requirements.

Apprenticeship: combines classroom instruction with paid, on-the-job training to prepare apprentices for highly skilled careers,[2] culminating in the award of an industry credential.[3] Registered Apprenticeship (RA) and Youth Apprenticeship programs meet national industry standards and are registered with the U.S. Department of Labor (DOL) or a federally recognized state apprenticeship agency.[4]

Armed Services Vocational Aptitude Battery (ASVAB): a multiple-aptitude battery that measures developed abilities and helps predict future academic and occupational success in the military.

Career and Technical Education (CTE): a term applied to schools, institutions, and educational programs that specialize in preparing students for careers primarily in skilled trades, applied sciences, or modern technologies, and in fields such as health science, agriculture, and business. As most CTE professions increasingly are requiring some postsecondary education, CTE programs should offer the academic rigor necessary to prepare students for postsecondary learning.

CTE Concentrator: as defined in the Perkins Act, a student who has completed at least two courses in a single career and technical education program or program of study.

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[1] ACT Education Corp. (n.d.). *ACT WorkKeys Career Assessments*. Retrieved December 19, 2024, from **https://www.act.org/content/act/en/products-and-services/act-workkeys/act-workkeys-assessments.html**.

[2] U.S. Department of Labor (n.d.). *Apprenticeship*. Retrieved December 19, 2024, from **https://www.dol.gov/general/topic/training/apprenticeship**.

[3] U.S. Department of Education. (November 2017). *A Planning Guide for Aligning Career and Technical Education (CTE) and Apprenticeship Programs*. Retrieved December 19, 2024, from **https://s3.amazonaws.com/PCRN/reports/Planning_Guide_for_Aligning_CTE_and_Apprenticeship_Programs.pdf**.

[4] Armed Services Vocational Aptitude Battery. (n.d.). *ASVAB Enlistment Testing Program*. Retrieved December 19, 2024, from **https://www.officialasvab.com/**.

Career Pathway: a coherent, articulated sequence of rigorous academic and career/technical courses, commencing in ninth grade and leading to an associate degree, baccalaureate degree and beyond; an industry-recognized certificate; and/or licensure. Similar to Career Pathways, *Programs of Study,* as required under the Perkins Act, define the education requirements spanning high school and postsecondary that lead to an industry-recognized credential, a postsecondary certificate, or an associate or baccalaureate degree in a student's chosen field.

Career Ready: as defined by the National Forum on Education Statistics (Forum) College and Career Readiness (CCR) Data Working Group, students who have attained the knowledge, skills, and dispositions that make them competitive employment candidates in their chosen career upon graduation, or that are needed to enroll in a technical college, enter a workforce training program, or pursue a work-based learning opportunity in their chosen field.

College and Career Readiness (CCR): as defined by the Forum CCR Data Working Group, efforts in K-12 education systems designed to prepare students with the knowledge, skills, and dispositions necessary to pursue higher education and career paths, whether they choose to enroll in a postsecondary degree program, pursue postsecondary training in their chosen career field, or embark on a meaningful career upon graduating from high school.

College Ready: as defined by the Forum CCR Data Working Group, students who have attained the knowledge, skills, and dispositions necessary to enroll in a postsecondary 2-year or 4-year degree program.

Dispositions and Behaviors: the knowledge, skills, habits, and character traits needed to succeed in college and the workplace, such as social and emotional skills and dispositions, and self-management skills. Sometimes referred to as "soft skills," "employability skills," "21st century skills, and "durable skills," these are a subset of lifelong learning skills.

Dual Enrollment: also called "concurrent enrollment," an enrollment agreement in which a high school student takes a course at a postsecondary institution and earns high school credit and postsecondary credit (dual credit) upon successful course completion.

Early Warning System: a data-based tool that uses specific indicators to identify students who may not be on track for graduation.

ESEA: Elementary and Secondary Education Act.

Experiential Learning: an approach to learning through experience, with an emphasis on participants learning through their reflections on those experiences.[5]

FAFSA: Free Application for Federal Student Aid.

Industry Certification: a workforce credential earned by passing an industry-recognized certification exam.

[5] National Forum on Education Statistics. (2019). *Forum Guide to Personalized Learning Data* (NFES2019160). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved October 21, 2025, from **https://nces.ed.gov/forum/pub_2019160.asp**.

International Baccalaureate (IB): a program of study for grades 3-12 designed and administered by the nonprofit International Baccalaureate Organization. Postsecondary institutions generally recognize IB programs as providing rigorous academic preparation for college and may grant college credit to students admitted to their institutions who scored at a certain level on IB examinations.

Interoperability: one of the criteria educational agencies use for selecting education technology to ensure that new technology can integrate with existing systems. This includes checking that the data the new technology will collect and use can be retrieved or exported easily and integrated into existing systems.[6]

National Career Clusters Framework: provides a shared structure and language for CTE program design across the United States. The framework has defined 14 Clusters of industry sectors and 72 Sub-Clusters, or major groupings of career areas within a given field.[7]

National Student Clearinghouse: a national nonprofit organization that maintains a voluntary comprehensive electronic registry of student records. This registry monitors students' enrollment, sustainability, and degree completion longitudinally in many postsecondary institutions, including universities, technical colleges, private career and technical schools.

Perkins Act: a federal statute that authorizes grants for CTE programs, most recently reauthorized in 2018 by the Strengthening Career and Technical Education for the 21st Century Act (Perkins V).

P-20W: preschool through workforce data systems, which can include K-12, adult education, CTE, community colleges, universities, health and human services, and workforce data.[8]

P-20W Data Governance: the overall management of the availability, usability, integrity, quality, and security of data across multiple state agencies responsible for preschool, K-12, postsecondary education, and workforce programs.

Postsecondary Feedback Loop: the process in which postsecondary institutions share timely information with K-12 education agencies regarding the enrollment and academic achievement of high school graduates enrolled at their institutions. This information is used by K-12 agencies to determine the effectiveness of their instructional and support programs.

SAT®: a college readiness assessment administered by the College Board.

SCED (School Courses for the Exchange of Data): a voluntary, common classification system for prior-to-secondary and secondary school courses. SCED was developed by the Forum, and is

[6] National Forum on Education Statistics. (2024). *Forum Guide to Technology for Teaching and Learning* (NFES 2024-045). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved October 21, 2025, from **https://nces.ed.gov/forum/pub_2024045.asp**.

[7] Advance CTE. (n.d.). *The National Career Clusters Framework*. Retrieved December 19, 2024, from **https://careertech.org/career-clusters/**.

[8] Statewide Longitudinal Data Systems Grant Program. (November 2016). *SLDS Issue Brief: State Approaches to College and Career Transitions*. U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved December 19, 2024, from **https://slds.ed.gov/services/PDCService.svc/GetPDCDocumentFile?fileId=24160**.

updated and maintained by a working group of state and local education agency representatives who receive suggestions and assistance from a wide network of subject matter experts at the national, state, and local levels.

Statewide Longitudinal Data Systems (SLDSs): K-12 and P-20W longitudinal data systems intended to enhance the ability of states to manage, analyze, and use education data.[9]

Work-Based Learning (WBL): programs such as apprenticeships, job shadowing, and internships that apply academic, career, and technical skills in a work setting, combine workplace and classroom learning, and provide participants support from academic or professional mentors.[10]

Workforce: the number of people who are either employed or unemployed and actively looking for work, also called the labor force.[11]

Workforce Development: a planned approach to fostering prosperity for communities, businesses, and individuals by enhancing the skills of individuals outside the workforce seeking employment, entry-level workers looking for job growth, and experienced workers in changing industries. Workforce development strategies may include continuing education, professional development, and other training opportunities designed to maximize professional success and career pathways.[12]

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[9] Statewide Longitudinal Data Systems Grant Program. (n.d.). *About the SLDS Grant Program*. U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved December 19, 2024, from **https://nces.ed.gov/programs/slds/about_SLDS.asp**.

[10] U.S. Department of Education, National Center for Innovation in Career and Technical Education. (n.d.). *Work-Based Learning Toolkit*. Retrieved December 19, 2024, from **https://cte.ed.gov/wbltoolkit/**.

[11] U.S. Bureau of Labor Statistics. (n.d.). *Labor Force Statistics from the Current Population Survey*. Retrieved December 19, 2024, from **https://www.bls.gov/cps/definitions.htm**.

[12] U.S. Department of Energy. (n.d.). *Blueprint 6: Workforce Development*. Retrieved October 15, 2025, from **https://www.energy.gov/sites/default/files/2023-05/Workforce_Development_v05_508.pdf**.

Chapter 1: Introduction

What Is College and Career Readiness (CCR)?

Numerous definitions of CCR have been offered by government agencies, state legislatures, and organizations as the concept has evolved over time. Some definitions incorporate references to civics or community, preparation for life, or military enlistment. Agencies may use phrases such as "postsecondary readiness," as in Kentucky, or "college, career, and military readiness," as in Texas, to refer to a similar concept. Agencies may grapple with defining where their responsibility for students' postsecondary success ends, where the responsibility of postsecondary institutions begins, and whether CCR definitions should reference students' postgraduate success, as opposed to just readiness. Another consideration for CCR is whether all students should be prepared for college paths, or if some students are better served by focusing on alternative paths to their careers.

Despite these nuances, most agencies' CCR definitions, at minimum, reflect a goal of ensuring that upon graduation their students are well prepared to enter college, the workforce, or workforce training programs. Whether students directly enter employment or career training programs after high school or first pursue a college education, the overarching goal of CCR is for career success throughout adulthood. Due to challenges around defining and measuring career readiness that are explored in this guide, CCR efforts historically have tended to prioritize college readiness. However, state and local education agencies (SEAs and LEAs) increasingly have broadened their focus on career readiness efforts in recent years. Reflecting these complexities, the Forum CCR Data Working Group developed the following definitions for the purposes of this guide:

- **CCR:** Efforts in K-12 education systems designed to prepare students with the knowledge, skills, and dispositions necessary to pursue higher education and career paths, whether they choose to enroll in a postsecondary degree program, pursue postsecondary training in their chosen career field, or embark on a meaningful career upon graduating from high school.
- **College ready:** High school graduates who have attained the knowledge, skills, and dispositions necessary to enroll in a postsecondary 2-year or 4-year degree program.
- **Career ready:** Students who have attained the knowledge, skills, and dispositions that make them competitive employment candidates in their chosen career upon high school graduation, or that are needed to enroll in a technical college, enter a workforce training program or apprenticeship, or pursue a work-based learning opportunity in their chosen field.

Why Are CCR Data Important?

CCR data play an important role in making connections between K-12 education agencies, higher education institutions, training programs, and workforce or career entities. This resource highlights multiple uses of CCR data, including

- informing instruction and K-12 programming;
- creating postsecondary feedback loops;
- informing metrics, accountability, and improvement; and
- maximizing career opportunities for all students.

High-quality, valid CCR data are used in the field of education and beyond. They help answer questions regarding college, career, and economic development, and SEAs and LEAs receive many inquiries from community stakeholders focused on college and career outcomes. Institutions of higher education (IHEs) increasingly are collaborating with K-12 agencies to coordinate efforts to support students in college admissions and retention efforts. Education agencies also increasingly are preparing students for the financial realities and project management skills required as soon as college application and enrollment processes begin. As SEAs and LEAs seek to prepare students for an evolving career landscape, CCR data reflect and inform education agencies' strategies to prepare students for college and career success.

A Brief History of CCR

Today's global, knowledge-based economy requires a more highly educated workforce than that of previous generations. SEAs and LEAs are tasked with ensuring that all students earn a high school diploma and that, in the process of completing their K-12 education, they become well prepared to succeed in college and career paths when they graduate. Concerted efforts to define and collect the data needed to assess knowledge and skills necessary for college and career success began in the 1990s. These efforts were formalized through the development of two primary initiatives in the early 2000s, the American Diploma Project and the Common Core State Standards. Early benchmarks and standards developed under these initiatives were made available for voluntary adoption by SEAs. After these early efforts, plans for collecting and using CCR data were expanded and formalized in the decades to follow, with Texas becoming the first state to mandate the development and use of CCR standards in 2006.[13]

Reauthorization of key federal legislation related to higher education and career success has expanded the emphasis on and possibilities for CCR data in recent decades. In 2015, the Every Student Succeeds Act (ESSA) reauthorized the Elementary and Secondary Education Act of 1965 (ESEA), replacing the No Child Left Behind Act of 2001 (NCLB). A 2015 White House ESSA fact sheet noted that prior to the passage of the law, 48 states and the District of Columbia already had CCR standards in place and 40 states were participating in federal-state partnerships to support students' CCR.[14] ESSA bolstered states' CCR development efforts by requiring that students be taught skills needed to succeed in college and careers.[15] In the 2018-2019 school year, graduation rates became part of states' ESSA accountability plans.

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[13] Southern Regional Education Board. (August 2011). *State College and Career Readiness Initiative: Final Progress Reports*. Retrieved December 19, 2024, from **https://www.sreb.org/sites/main/files/file-attachments/11e10_prog_rep_bw_0.pdf**.

[14] White House, The. (December 2015). *Fact Sheet: Congress Acts to Fix No Child Left Behind*. Retrieved December 19, 2024, from **https://obamawhitehouse.archives.gov/the-press-office/2015/12/03/fact-sheet-congress-acts-fix-no-child-left-behind**.

[15] U.S. Department of Education, Office of Career, Technical, and Adult Education, Division of Academic and Technical Education, Perkins Collaborative Resource Network. (n.d.). *Every Student Succeeds Act (ESSA)*. Retrieved December 19, 2024, from **https://cte.ed.gov/legislation/about-essa**.

The Perkins Act, a federal statute designed to improve American technical education and thus support the economy, was reauthorized in 2018 as the Strengthening Career and Technical Education for the 21st Century Act (Perkins V). While continuing to authorize grants for Career and Technical Education (CTE) programs, Perkins V also added new CCR-related flexibilities for states, including:

- allowing the use of Perkins V funds to support all students' career development and exploration, not just students enrolled in CTE programs; and
- authorizing support for career exploration strategies in grades five through eight.

Today, education agencies implement CCR efforts as early as elementary and middle school, and many have CCR or career development departments. With CCR data such as coursetaking data, grade point average, and performance on state assessments embedded in many state and federal accountability requirements, SEAs and LEAs have incorporated CCR goals and metrics into their strategic planning. Many K-12 agencies are partnering with higher education and workforce agencies to coordinate CCR support for students and educators.

Longitudinal CCR efforts also have been instituted. As interest in CCR grew, and as states started building education data warehouses, federal and state leaders wanted to see CCR incorporated into them. As a result, these warehouses became preschool through postsecondary education data systems (P-20), or even P-20W–preschool through workforce data systems. These statewide longitudinal data systems (SLDSs) may include data from K-12, adult education, CTE, community colleges, universities, health and human services, and workforce agencies. SLDSs enhance the ability of states to manage, analyze, and use education data. Title II of the Educational Technical Assistance Act of 2002 created the Institute of Education Science (IES) and has authorized the SLDS Grant Program to award competitive, cooperative agreement grants to states and territories since 2005. The SLDS Grant Program accelerated the development of the P-20W SLDS with a common focus of connecting education and workforce data and a shared goal of identifying pathways for individuals to succeed in education and work, with College and Career identified as one of the six priority funding areas.

A growing emphasis on skills and credentials is reshaping best practices and discussions around CCR, including the following changes:

- **Shift to competency-based education:** There is a growing focus on developing specific competencies rather than solely traditional academic knowledge. Programs emphasize skills like critical thinking, communication, and teamwork, which are considered essential in college and the workforce.
- **Integration of skills and dispositions:** Skills and dispositions are gaining recognition as vital components of readiness. Educators are incorporating training in areas such as emotional intelligence, adaptability, and problem-solving alongside technical skills.
- **Increased importance of credentials:** Certifications, badges, and other credentials are becoming more valuable, alongside degrees. Many institutions and employers are recognizing these as valid indicators of a candidate's capabilities, often prioritizing them alongside or even over traditional degrees.

- **Real-world experience:** Internships, apprenticeships, and project-based learning increasingly are emphasized. These experiences help students apply skills in real-world settings, making them more attractive to employers and better prepared for college.
- **Personalized pathways:** There is a movement toward personalized education plans that align with students' interests and career aspirations. This approach encourages students to pursue relevant skills and credentials that will serve them in their future endeavors.
- **Collaboration with industry:** Educational institutions are partnering more closely with industries to ensure that curricula align with workforce needs. This collaboration helps to define the skills and credentials that are most valuable in the job market.
- **Data-driven decision-making:** Schools are using data to track student progress on skill acquisition and credential attainment. These data help educators refine programs and better prepare students for postsecondary success.
- **Lifelong learning mindset:** The emphasis on skills encourages a culture of lifelong learning, in which students understand the importance of continuously updating their skills and credentials to stay relevant in a changing job market.

As postsecondary education, training, and career paths continue to evolve, so too do K-12 CCR efforts to prepare students for these new opportunities. An estimated 70 percent of jobs will require postsecondary training or education by 2027.[16] Over time, ED initiatives have prioritized establishing a stronger connection between workforce systems and education systems to provide students with more opportunities to pursue careers that pay a living wage.[17] In collaboration with the U.S. Departments of Labor and Commerce, and in partnership with state and local leaders, ED has also invested in redesigned approaches to career pathway systems by increasing students' access to dual enrollment, work-based learning, workforce credentials, and career advising and navigation. Initiatives have recognized the growing demand for workers in fields such as cybersecurity, biotechnology, and advanced manufacturing. As SEAs and LEAs manage data associated with evolving approaches to CCR, they continue to develop and update best practices for defining, collecting, integrating, using, and reporting CCR data.

Metrics for Measuring CCR: How Many High School Graduates Are College and Career Ready?

Data from ED provide some insights relevant to the number of college- and career-ready graduates. In October 2022, 62 percent of the nation's 3.0 million recent high school completers were enrolled in 2- or 4-year institutions.[18] However, tracking college-going trends is only one way to estimate how well-prepared students are for college and career success and does not encompass students who pursue paths other than college enrollment.

[16] U.S. Department of Education. (October 2024). *Raise the Bar: Postsecondary and Career Pathways.* Retrieved December 19, 2024, from https://www.ed.gov/about/ed-initiatives/raise-bar/raise-the-bar-postsecondary-and-career-pathways.

[17] U.S. Department of Education. (n.d.). *Unlocking Career Success: About.* Retrieved October 15, 2025, from **https://learnworkecosystemlibrary.com/initiatives/raise-the-bar-unlocking-career-success-ed/**.

[18] National Center for Education Statistics. (2023). *Digest of Education Statistics.* Retrieved October 3, 2025, from **https://nces.ed.gov/programs/digest/d23/tables/dt23_302.10.asp?current=yes**.

No standard measure for CCR currently exists, and different states have their own wide-ranging strategies for estimating how many high school graduates are prepared to succeed in college and careers. SEAs and LEAs often use metrics created from multiple data sources to determine how many graduates are college and career ready, and they may provide multiple pathways for students to meet CCR standards. These metrics reflect the data available in each state and each agency's unique CCR strategies and goals. CCR metrics often include a combination of K-12 data that help predict future performance and postsecondary data that shed light on whether predicted outcomes were achieved, such as SAT/ACT scores and participation in programs such as Advanced Placement and International Baccalaureate. Like other educational outcomes, the standards vary across states, and in the absence of a national standard, states' CCR rates vary widely and to a greater degree than college enrollment rates.[19]

While there is not a national target for states and districts to consider in terms of achieving CCR, institutions such as Georgetown University have conducted studies and developed recommendations related to what education, experience, and credentials the future workforce will require. For example, one Georgetown study outlines three pathways to jobs that pay family-sustaining wages in the year 2031 based on different levels of educational attainment: workers with a high school diploma or less, those with some postsecondary education but less than a bachelor's degree, and workers with bachelor's degrees and advanced degrees. The study anticipates an increase in higher paying jobs for workers on a bachelor's degree pathway and a decline in jobs that pay family-sustaining wages for those on the high school pathway.[20]

[19] All4Ed. (n.d.). *Undermeasuring: College and Career Readiness Indicators May Not Reflect College and Career Outcomes.* December 19, 2024 from **https://all4ed.org/publication/undermeasuring/**.

[20] Strohl, J., Gulish, A., and Morris., C. (2024). *The Future of Good Jobs: Projections through 2031.* Georgetown University, Center on Education and the Workforce. Retrieved December 19, 2024, from **https://cew.georgetown.edu/wp-content/uploads/cew-the_future_of_good_jobs-fr.pdf**.

Chapter 2: College and Career Readiness (CCR) Data Collection and Integration

This chapter details best practices for CCR data collection, and explores targeted questions, analyses, and processes that can be explored when K-12, postsecondary, and workforce data are integrated.

CCR Data Collection

CCR data are collected to provide answers to questions from a variety of education stakeholder groups, making it critical that reporting agencies carefully consider which elements or indicators are included in their data systems. For example, a local education agency (LEA) may wish to analyze whether graduates of a high school internship program performed better in a postsecondary training program than students who did not participate in the program. Collecting relevant performance data from the postsecondary training program, and linking K-12, postsecondary, and workforce data sets, would help the LEA determine whether any changes or additions should be made to the internship program to better meet the needs of future participants. Education agencies can build a culture of CCR data quality by focusing on collecting the data that, when linked, will provide the right information to answer the CCR questions being asked; ensuring the accuracy and completeness of the data; and making critical data available to users as promptly as possible. National and state-level CCR frameworks and standards, data models, and best practices can be useful in the data collection planning process.

Key CCR Data Metrics

Determining key CCR data metrics requires first asking why and how these data will be used:

- What questions can they answer?
- What purposes can they serve?
- Which stakeholders will find them relevant?
- How do these metrics align with the way other districts and states measure CCR?
- How do these data connect K-12 readiness and postsecondary/career outcomes?
- How can these data and associated analyses inform decisions in the K-12, postsecondary education, and workforce sectors?

Different education stakeholder groups will seek answers to different questions related to students' CCR. In turn, the data needs of various stakeholders vary. Chapter 3 discusses the unique CCR data needs of stakeholder groups in detail.

No single factor can determine whether students are college and career ready, and some common CCR data vary in availability by state or lack standardization across states and agencies.

For example, a commonly used CCR indicator is the extent to which students who enroll in college can complete credit-bearing coursework successfully without the need for remedial (or developmental) classes. Agencies may use data from postsecondary institutions and the National Student Clearinghouse to understand students' postsecondary enrollment and retention. However, not all states collect remediation data, how remedial coursework is defined varies extensively by postsecondary institution, and the criteria for determining if a student must take remedial courses is highly variable between institutions. Another common CCR indicator is scores on standardized college entrance exams, which a growing number of postsecondary institutions are removing from application requirements or discontinuing altogether. Finally, while CCR efforts reflect a growing emphasis on career readiness, which traditionally has been treated as a secondary priority to college readiness, many state education agencies (SEAs) and LEAs face a deficit in workforce data after students graduate.

CCR data can be divided into two broad categories: those used to determine readiness in K-12 students and those used to evaluate students' success after high school. Leading CCR data are predictive data collected at the K-12 level that reflect whether students meet the minimum requirements to be deemed college or career ready before or by high school graduation. Lagging CCR data capture students' postsecondary education and career outcomes after graduation. Some agencies are working to establish strong leading data indicators that they can review at multiple points throughout the year to determine if students are on track to meet CCR expectations and to flag when interventions may be needed. For example, with support from the U.S. Department of Education's (ED) National Center for Education Research (NCER), the Oregon Department of Education and the University Oregon conducted a study examining the impact of the state's On-Track to Graduation initiative. By focusing on expectations for what students should achieve each year to remain on track for CCR, K-12 agencies can respond with more actionable measures than if they focus primarily on outcomes after students graduate. At the same time, to determine whether students are well prepared for college and employment, SEAs and LEAs need access to lagging postsecondary and workforce data that provide more detail about outcomes. Incorporating leading K-12 data and lagging postsecondary data into CCR metrics can help provide a balanced perspective to CCR efforts.

With these complexities in mind, SEAs and LEAs have developed sophisticated metrics to establish students' CCR, drawing on a combination of data collected from K-12, postsecondary, and workforce institutions. Additionally, SEAs and LEAs often allow students to meet CCR standards several different ways, using a combination of options.

K-12 student data that can provide information about CCR may include:

- on-time high school graduation;
- dual enrollment and dual credits awarded;
- GPA;
- state assessment performance;
- advanced or accelerated coursetaking;

- number or percentage of students enrolling and/or passing courses in programs such as IB, dual enrollment, and AP;
- earned early college credit;
- General Educational Development (GED) Test performance;
- college entrance exam performance;
- state scholarship awards;
- enrollment in career training programs;
- participation in work-based learning opportunities such as apprenticeships, job shadowing, and internships;
- JROTC participation;
- participation in career exploration and planning activities;
- completion of career pathways, concentrations, certifications, and credentials;
- workplace assessment exam performance; and
- Armed Services Vocational Aptitude Battery (ASVAB) results.

Postsecondary education and workforce data provide information about student outcomes after they leave high school. These data can be compared with K-12 data to evaluate how accurately K-12 data predicted college and career success and where adjustments to readiness metrics should be made. Postsecondary career readiness data may include:

- postsecondary enrollment;
- postsecondary persistence;
- postsecondary credits;
- postsecondary graduation rates;
- employment rates;
- wage/income data; and
- postsecondary workforce training program enrollment and completion.

Resources for Measuring Work-based Learning Participation

The Career & Technical Education Research Network resource *Building Robust District Work-Based Learning Data Collection Systems* (**https://cteresearchnetwork.org/resources/district-work-based-learning-data-collection**) outlines six school districts' promising approaches for the collection and use of work-based learning data.

The Education Development Center's *Work-Based Learning Data Collection Toolkit* (**https://cteresearchnetwork.org/resources/work-based-learning-data-collection-toolkit**) is designed to help administrators in local education agencies develop or improve their systems for collecting data on students' participation in work-based learning opportunities.

In Virginia, on-time graduates who meet at least one of five qualifying criteria meet the standard for the state’s College, Career, and Civic Readiness Indicator (CCCRI). These criteria include:

- credit for advanced coursework such as Advanced Placement (AP), International Baccalaureate (IB), Cambridge International, or dual enrollment;
- Career and Technical Education (CTE) completion and earning a CTE credential;
- work-based learning experience;
- service-learning experience; or
- completion of three Junior Reserve Officers' Training Corps (JROTC) courses and earning a CTE credential.

USD 204-Bonner Springs/Edwardsville Unified School District (KS) looks at graduation data, CTE completer status, and student plans for postsecondary success. Students complete an Individual Plan of Study to support a successful transition to postsecondary education and/or the workforce. The foundational elements of the plan include career interests identified through a survey or assessment, meeting graduation requirements, completing approved coursework for the student’s educational and career goals, and work-based learning experiences.

Finally, the Hawai'i Department of Education’s key metrics for measuring CCR include:

- proficiency on the Hawai'i State Smarter Balanced Assessment for English language arts and mathematics and on the Next Generation Science Standards (NGSS) for science;
- ACT (English, Math, Science);
- AP program data;
- high school outcomes data, including
- on-time high school graduation,
- honors recognition certificates,
- high school diploma, and
- Seal of Biliteracy;
- accelerated learning data, including dual credit participation;
- CTE data, including CTE concentrator and CTE honors data;
- college going data, including the percent of students enrolled in postsecondary institutions by the fall after graduation; and
- the extended-year graduation rate, a metric that measures how many students graduate high school beyond the traditional 4-years, such as 5, 6, or 7s.

In addition to the student-level data needed, most use cases require additional contextual information to answer the questions or conduct the analyses presented. This contextual information, together with the key data needs, can help explain why some programs are producing mixed results in schools or LEAs. For example, it can be helpful to know if agencies have policies and programs in place that support CCR efforts, like Iowa's state requirement that LEAs have an Individual Career and Academic Plan (ICAP) for all students in grades 8-12. Types of contextual information may include

- district, school, or program-level demographics;
- school and/or LEA attendance and discipline data;
- school safety data;
- college applications;
- high-quality pathways;
- courses offered, including the availability of college-level coursework, such as honors, IB, Cambridge International, dual enrollment, and AP;
- Free Application for Federal Student Aid (FAFSA) completion;
- teacher and/or school counselor staffing levels;
- teacher postsecondary education and certification data;
- policies and programs that support CCR;
- resources allocated for CCR efforts;
- alignment of high school graduation requirements and college entry requirements; and
- current workforce needs within a community.

Dispositions and Behaviors Data

Dispositions and behaviors are the knowledge, skills, habits, and character traits needed to succeed in college and the workplace, such as social and emotional skills and dispositions or self-management skills. Sometimes referred to as "soft skills," these are a subset of lifelong learning skills, which also may include technology skills, financial literacy and consumer skills, civic skills, higher order thinking skills, and the ability to apply knowledge in cross-disciplinary contexts. CCR metrics generally focus on academic preparedness and participation in specific programs, yet dispositions and behaviors play an important role in college and career success. For example, workplaces and educators recognize that communication skills, collaboration, and adaptability are important for workplace effectiveness. The addition of the school quality/student success indicator for state accountability systems under the Every Student Succeeds Act (ESSA) conveyed that these types of skills could, and should, be a part of state accountability systems. The most common way states accomplished that was by adding chronic absenteeism or a social and emotional learning (SEL) data metric to their plans.[21]

However, while it is recognized widely that they are important to college and career success, defining and measuring dispositions and behaviors in students can be an inexact science. There is no consensus about which skills should be measured and they are difficult to define and measure

[21] Council of Chief State School Officers. (January 2017). *Identifying a School Quality/Student Success Indicator for ESSA: Requirements and Considerations*. Retrieved October 15, 2025, from **https://www.nciea.org/wp-content/uploads/2023/04/CCSSO_SQSS_Brief.pdf**.

empirically. Most SEAs and LEAs are not able to collect data on dispositions such as executive functioning, interpersonal skills, or work ethic. As a result, agencies tend to report on proxies that are more easily measurable. Attendance, discipline data, and teacher or counselor observations sometimes are used as proxies for measuring these traits, while other measurements may come from assessment instruments such as WorkKeys, which measures the foundational skills required for success in the workplace. The successful completion of internships and other work-based learning experiences also can indicate a student's mastery of important traits needed for workplace success. For example, the Washington State Board of Education collects information about work-based learning, such as guest speakers, field trips, job shadows, and worksite learning.

Employability Skills Framework

The U.S. Department of Education's Office of Career, Technical, and Adult Education (OCTAE) compiled an Employability Skills Framework (**https://cte.ed.gov/initiatives/employability-skills-framework**) outlining nine key skills needed to succeed in labor market. The skills are grouped into the three broad categories of workplace skills, applied knowledge, and effective relationships.

These data usually are not stored in a state longitudinal student data system (SLDS) but rather in student information systems (SISs). Thus, the SEA data system typically plays a limited role in the collection of these data other than providing longitudinal attendance and discipline data. However, the SEA can play a role in determining the extent to which state policy dictates, encourages, or supports the measurement and reporting of dispositions and behaviors data.

An increased focus on students' SEL led to some districts implementing SEL surveys of their students. For example, California's CORE Districts, a consortium of eight school districts, administered SEL surveys to more than 400,000 3rd- through 12th-grade students in the 2015-16 school year to measure self-management, growth mindset, self-efficacy, and social awareness.[22] In Nevada, the state's Portrait of a Learner initiative, launched in 2023, emphasizes the importance of competencies such as critical thinking, problem solving, communication, and social and emotional skills, alongside academic knowledge. Grades earned in work-based learning and experiential learning also can be used to measure or serve as proxies for dispositions and behaviors.

Current SISs are not fully equipped to measure dispositions and behaviors, atypical coursework (such as service learning, community service, and online learning), or specialized designations. There is an emerging need to identify metrics that are aligned closely with these lifelong learning skills, and agencies are exploring methods to measure and develop benchmarks for dispositions and behaviors that predict future college and career success. Not all SEAs and LEAs view dispositions and behavior-related data for CCR purposes and may treat those data as an entirely separate domain.

[22] Meyer, R.H., Wang, C., and Rice, A. (May 2018). *Measuring Students' Social-Emotional Learning Among California's CORE Districts: An IRT Modeling Approach.* Retrieved December 19, 2024, from **https://www.edanalytics.org/resources/measuring-students-social-emotional-learning-among-californias-core-districts-an-irt-modeling-approach**.

Workforce Data

One of the goals of K-12 education is to prepare students for successful careers aligned with individual student interests and anticipated workforce needs. To do so, the education sector needs ongoing communication with the workforce sector. Education agencies need current and projected labor market information from workforce agencies, including information on anticipated high-demand careers and the education qualifications needed for success in those careers. The level of education needed for a student to be career ready will depend on his or her specific career goals. Not all careers require a 4-year postsecondary degree; many require a sub-baccalaureate certificate, industry certification, or associate's degree.

CCR efforts may be tailored to regional demands. For example, for entities in the broader Pacific region, there is substantial need for trades workers in construction, healthcare, teaching, and other CTE certification areas. The region also is seeking to develop eco-tourism and hospitality sectors, especially focused on oceanic contexts. Some of the challenges to the labor supply include English proficiency expectations or limitations, foreign labor markets, low college going rates, and unstable and low bandwidth connectivity. In response, school academies in Hawai'i have taken steps to improve outcomes measured by CCR data. Guam Community College's work-ready pre-apprenticeship and apprenticeship boot camps engage industry partners to ensure that students receive the training and skills needed to meet the local economy's demands.

State Wage Interchange System (SWIS)

SWIS was developed to facilitate the interstate exchange of wage data between participating state agencies for the purpose of assessing and reporting on state and local performance for the programs authorized

- under the Workforce Innovation and Opportunity Act (WIOA);
- under other statutory provisions authorizing programs identified as one-stop partners under WIOA; and
- for other purposes allowed under the SWIS Data Sharing Agreement.

Among other considerations, the SWIS Agreement addresses the confidentiality requirements of the Family Educational Rights and Privacy Act (FERPA) for education records. More information about SWIS is available at **https://www.dol.gov/agencies/eta/performance/swis**.

While SEAs and LEAs can often access postsecondary education data, many do not have the same level of access to workforce data. The primary sources for workforce data for SEAs and LEAs are unemployment insurance wage records that states usually collect on a quarterly basis. While access to workforce data is limited, particularly in relation to student movement out of state after graduation, these data provide valuable insights when collected. Education agencies may benefit from developing strategies and partnerships to collect workforce data and establish workforce feedback loops.

Learning and Employment Records (LERs)

An emerging system called Learning and Employment Records (LERs) is designed to contain verifiable information about individuals' educational and work-based experiences and skills in a digital record that is easily transferable between employers, academic institutions, trade associations, and other stakeholders. With more technological advancements and a broader adoption of LERs, an effort supported by the U.S. Chamber of Commerce Foundation, this system may help increase SEAs and LEAs' access to useful workforce data over time. More information about LERs is available at **https://www.uschamberfoundation.org/workforce/introducing-ler-hub-next-phase-development-learning-and-employment-records**.

CCR Data Integration

For students to graduate from high school prepared to succeed in college and careers, they need information and planning tools to allow them to explore long-term college and career goals, identify what is needed to meet those goals, and measure their progress throughout high school. In turn, teachers and counselors at the school level, along with SEA, LEA, postsecondary, and workforce agency administrators, all have roles and responsibilities in supporting students in meeting their goals and ensuring that CCR programs are producing the desired results. This integrated support system requires integrated data systems with online resources and tools that provide access to timely data. Components of CCR data systems can be found in various education agencies at different levels of functionality. For example:

- Alaska's merit-based scholarship program, the Alaska Performance Scholarship,[23] is the legislature's CCR metric, and local school districts are responsible for tracking the data for GPA, test scores, and curricula requirements.
- In Iowa, all LEAs are required to have a Career Information System (CIS) to support students developing individualized career and academic plans. The state publishes a list of approved CIS vendors.
- The Virginia Department of Education (VDOE) uses the Virginia Longitudinal Data System to connect with other state agencies. VDOE also contracts with the National Student Clearinghouse (NSC) to get postsecondary enrollment and completion data for K-12 and adult education students.
- In Washington, the state requires that students have High School and Beyond Plans to help guide their coursetaking and document their preparation for college and career paths.

At the LEA level, CCR data often are not maintained in dedicated CCR data systems but are part of the data that agencies use daily, including students' course completions, assessments, pathways, concentrations, and certifications. At the state level, agencies have access to more data now than in previous decades. The management of data sharing between K-12 and higher education varies across the states, and agencies are working toward integrated systems. Some states have

[23] Alaska Commission on Postsecondary Education. (n.d.). *Alaska Performance Scholarship (APS)*. Retrieved December 19, 2024, from **https://acpe.alaska.gov/financial-aid/ak-performance-scholarship**.

longitudinal P-20W systems encompassing preschool, K-12, postsecondary, and workforce data, or are in the process of developing P-20W systems.

- In 2019, the California State Legislature authorized a statewide, longitudinal data system called the Cradle-to-Career Data System.[24] Still in development, it will connect K-12, college, social services, and employment data, with an emphasis on helping students achieve CCR goals.
- In 2020, the Nebraska Legislature codified into law a partnership between the state's education and labor departments called the Nebraska Statewide Workforce & Educational Reporting System (NSWERS).[25] The purpose of NSWERS is to establish a data system containing administrative data from local governments, nonprofit organizations, and state agencies, and to evaluate the efficacy of the state's workforce training and education systems.
- In 2023, Washington State established a mandate to transition every district with a middle and/or high school to a universal online CCR platform by 2027. The platform will capture and provide state-level access to data including students' career and educational goals, alignment of selected courses and pathways with those goals, and financial aid completion.
- The Nevada P-20 to Workforce Research Data System (NPWR), a P-20W system under the statewide SLDS umbrella, informs the state's workforce and education initiatives and policies. NPWR supports CCR efforts by linking the data across education and workforce sectors.

The number and types of postsecondary credentials and postsecondary education providers are expanding, making it more challenging for SEAs and LEAs to collect accurate postsecondary attainment outcomes on all students. Similarly, the number and types of workforce credentials are expanding to include items such as industry-recognized certifications, state occupational licenses, noncredit certificates, and badges. While many of these credentials have labor market value, the proliferation of these credentials and the variety of organizations that award them (states, industry associations, companies) makes it challenging to include them in data systems. However, some SEAs and LEAs agencies are exploring or have made progress in navigating the management of credentials:

- Iowa will begin collecting the Industry Recognized Credentials (IRC) a student receives in the 2024-25 school year, and the state has published a list of state-recognized IRCs. LEAs will be able to add the IRC codes to each student in their SIS, and that data will be collected in the student-level data collection. Each year, the list of state-recognized IRCs will be reviewed and updated.
- In Nevada, students can obtain an industry recognized credential based upon the state's Industry Recognized Credential List, including information technology (IT), healthcare and medical services, mining and minerals, construction, career readiness, and manufacturing and logistics. Career readiness refers to the ACT WorkKeys National Career Readiness Certificate (NCRC).

[24] California Cradle to Career Data System. (n.d.). Retrieved December 19, 2024, from **https://c2c.ca.gov/**.

[25] Nebraska Statewide Workforce & Educational Reporting System. (n.d.). Retrieved December 19, 2024, from **https://nswers.org/**.

- Virginia has added ASVAB scores to its CCR accountability indicator, "3E," representing enrollment, enlistment, and employment. LEAs do not have these scores unless they administer the test, and many do not. Virginia may explore a data sharing/linkage agreement with the military to procure these scores.
- Washington State uses course coding to recognize when IRCs are earned. Because managing all potential options is challenging, the process stays limited to the state-level annual process of data collection for the course catalog.

Agencies may find that CCR efforts and standards emphasize college readiness over career readiness due in part to the more robust postsecondary feedback loop, in which postsecondary institutions share timely information with K-12 education agencies regarding the enrollment and academic achievement of high school graduates enrolled at their institutions. K-12 agencies use this information to determine the effectiveness of their instructional and support programs. The postsecondary feedback loop is discussed further in Chapter 3.

Linking Education and Workforce Data

To evaluate how prepared high school graduates are for success in college and careers, data on workforce outcomes are necessary. Connecting education and workforce and military data presents several challenges for SEAs and LEAs due to differences in data collection systems, privacy concerns, and the complexity of tracking individuals across various domains.

In the absence of a unique identifier for students from K-12 through workforce data systems, SEAs have used a variety of approaches to match education and workforce data, but no single solution currently exists. There is a variation among states in the availability of workforce and significant differences in local and state economies and workforce demands. Some states have used state identification cards or driver's license numbers as proxy. Others have used elaborate workflows to match datasets and then strip away the regulated information prior to sharing. Some states have legislative resolutions that establish conditions and expectations for government agencies to develop ways to share data between state agencies. Some agencies have developed relationships with workforce boards, which provide insights into local and regional job opportunities. The following examples show how some SEAs have linked education and workforce data successfully or are in the process of doing so:

- Kentucky's longitudinal data system, managed by the Kentucky Center for Statistics (KYSTATS), is able to link education and workforce data. KYSTATS has the authority to collect and link data from five state agencies including the Kentucky Education and Workforce Development Cabinet.
- The Louisiana Foundational Integrated Research System for Transformation (LA FIRST) was created as a result of 2023 legislation. The implementation of that act will link education and workforce data. The Louisiana Department of Education has established a data sharing agreement to move this work forward with other state agencies.

- Texas provides publicly available reporting on the wages of employed Texans who attended Texas public schools and college enrollment and/or employment following high school graduation by CTE participation.[26]
- Illinois is in the process of implementing the Illinois Longitudinal Data System (ILDS), and there are datasets planned that will connect educational data to workforce data; however, the primary emphasis is on teacher workforce data, rather than understanding student placement in the workforce after high school.
- Maryland has done work to align industry certifications to match jobs that are needed in the state.
- In New York State, while the SEA has not linked education and workforce data, the public university systems (State University of New York and City University of New York) have had successful experiences in linking higher education to workforce data.

Statewide Longitudinal Data Systems (SLDS) Grant Program

The SLDS Grant Program was authorized by the Educational Technical Assistance Act of 2002, Title II of the statute that created the Institute of Education Sciences (IES), and the first grants were awarded in 2005. The SLDS Grant Program provides grant funding and other resources to support the design, development, implementation, and expansion of K-12 and P-20W (preschool through workforce) longitudinal data systems, which, in turn, help state and local education agencies (SEAs and LEAs), and other education stakeholders make informed decisions. More information about the program and grantees is available at **https://nces.ed.gov/programs/slds/**.

Some LEAs use workforce data to inform district decision-making:

- Jefferson County Public Schools (KY) uses KentuckianaWorks Labor Market Intel (LMI) data to determine pathway offerings in the district as well as to determine the LEA's Career and Technical Education personnel allocations and equipment funding. The district regularly analyzes its over- and under-saturation data to ensure that it has appropriate enrollments in its pathways. All LMI and enrollment data are presented annually to the Local Needs Assessment committee to determine appropriate changes.
- In Green Hills Area Education Agency (IA), CTE program advisors review labor market data as one factor in determining programming.

Workforce and economic data rely heavily on the Social Security number to identify individuals, and it is the only identifier available to determine the salary of an individual after graduation from secondary or postsecondary school. The use, sharing, and storing of this information is often regulated by both federal and state labor laws regulations, while the Social Security number does not exist in many education data systems, which are governed by student data privacy laws. Determining who is authorized to access education and workforce data, and how data will be

[26] Texas Education Agency, Texas Public Education Information Resource. (n.d.). College Enrollment & Employment. Retrieved October 15, 2025, from **https://texaseducationinfo.org/Home/Topic/college_enrollment_and_employment**.

anonymized, requires lengthy negotiations and the establishment of data exchange agreements among state agencies. Additionally, data collections should be completed over several years to provide an accurate picture of how students are progressing through their careers, and in turn, how effective their educational training was. A potential solution to these challenges is to set up technical infrastructure to allow secure access to linked data for analysis, which requires investment in a sustainable statewide longitudinal data system. Successful matching techniques require close cooperation with other agencies, and thus a strong interagency data governance structure can significantly help with these efforts.

Additionally, some states have developed secure and transparent connections to workforce data by partnering with postsecondary agencies, which generally use Social Security numbers in their student records, or by partnering with research and/or workforce centers. In some states, such as Kentucky, workforce data are connected with SLDSs. In Nevada, the Nevada System of Higher Education (NSHE) has historically served as the bridge between the Nevada Department of Education (NDE) and the Nevada Department of Employment, Training, and Rehabilitation (NDETR). Recently, the state has been exploring adding the Nevada Department of Motor Vehicles into the agreement. In Alaska, the state's Department of Education and Early Development (DEED) has a memorandum of agreement (MOA) with the Alaska Department of Labor and Workforce Development (DOLWD). The MOA in place allows DEED to send DOL an encrypted file of secondary student data such as name, birthday, school, demographic characteristics, and other information and outcomes. DOLWD sends aggregated graduation, postsecondary enrollment, and GED completion for Perkins recipients.

Challenges to Linking Education and Workforce Data

- Education and workforce data are maintained by different agencies within and across states, while industry certification data originate from various vendors, creating data silos.
- Data privacy laws can limit data sharing between different agencies overseeing the education and workforce data.
- Education data and workforce data may have different data standards and there are limitations on the specificity and granularity of labor market data that constrain how much detail can be known about labor market participation. For example, workforce data may only include individuals with unemployment insurance, excluding some workers, such as those who work for small companies, short-term contractors, freelancers, or farm workers.

Statewide Longitudinal Data Systems (SLDSs) and Career and Technical Education (CTE) Outcomes

State CTE data systems are often maintained as separate databases from SLDSs and linking records can pose significant challenges. In this paper (**https://educationnorthwest.org/resources/harnessing-state-longitudinal-data-systems-assess-career-and-technical-education-outcomes**) the nonprofit organization Education Northwest explores the potential for SLDSs to include new categories of data elements to capture information on students' CTE in-school experiences and their post-program outcomes.

- Discrepancies in the quality and completeness of data from education and workforce sources can compromise the accuracy and reliability of linked data. For example, a lack of uniformity among industry codes in workforce data may lead to childcare workers employed in corporate care at a factory or a care center on a college campus being listed under the company code—manufacturing or university—and not early childcare in a data collection.

Potential Solutions to Linking Education and Workforce Data

- Establish unified data standards and definitions across education and workforce agencies for more straightforward data linking.
- Establish unique identifiers across public agencies.
- Collaborate across agencies at local, state and federal levels to promote better planning, with well-established and executed data sharing agreements that support integrated data systems. Use a data governance framework to address privacy concerns, data access, sharing and use policies.
- Implement longitudinal data systems to track individuals from birth to workforce.
- Develop consistent ways of collecting data from vendors and partners such as industry certifications and college entrance assessments and linking them to individual students.
- Develop more partnerships and collaboration between education and businesses to collect and share data that could help education agencies understand wages based on skillsets.

Joint Guidance on Data Matching to Facilitate WIOA Performance Reporting and Evaluation

Congress enacted the Workforce Innovation and Opportunity Act (WIOA) in July 2014 to expand training and job search opportunities to Americans facing unemployment or underemployment. Congress required that states measure local and state performance accountability measures using quarterly wage records consistent with state law. WIOA also requires states to cooperate in conducting evaluations and eligible training providers to report employment. The Departments of Education and Labor issued a joint guidance (**https://studentprivacy.ed.gov/resources/joint-guidance-data-matching-facilitate-wioa-performance-reporting-and-evaluation**) on data matching to facilitate these requirements of reporting and evaluation requirements.

Some consortia collect, de-identify, and share workforce and economic data for analysis. NPWR brings together multiple state agencies to collaborate on data sharing and analysis. NPWR data are being used to study topics like the impact of CTE programs, the transition from high school to college, and the relationship between education and workforce outcomes. The LMInformer Consortium, comprising Montana, Ohio, Nevada, Arkansas, Virginia and Michigan, gives states a way to provide customizable online labor market information, allowing them to save costs on developing their own workforce and labor market information websites. It is semi-open-source system that is open to any state that joins the consortium.[27]

[27] National Association of State Workforce Agencies. (n.d.). *Montana's LMInformer Consortium*. Retrieved December 19, 2024, from **https://www.naswa.org/naswa-awards/montanas-lminformer-consortium**.

Important Considerations

Data Governance

The effective use of data to support CCR goals and strategies requires a high-functioning data governance structure at the state level that brings together state K-12, postsecondary, and workforce agencies. The interagency data governance program must be built on a common foundation, often challenged by competing priorities and agendas from these agencies. For states with more formal structures such as an SLDS or data governance program established by state legislation, obtaining administrator and policymaker-level buy-in may be more feasible. Data governance is critical for making consistent decisions about how CCR is measured, how the data are stored, and how they are used.

P-20W Data Governance

P-20W interagency data governance systems—the management of the availability, usability, integrity, quality, and security of data across multiple state agencies responsible for preschool, K-12, and postsecondary education, as well as workforce programs—present more challenges than K-12 data governance. In addition to the initial challenge of bringing together various agencies to work cooperatively on a common agenda, there are varying security requirements, data use policies, reporting requirements, and timelines among the participating agencies. A strong P-20W data governance system is responsible for determining policies on data privacy, security, quality, and usage. Whether or not a data governance structure is successful depends primarily on strong leadership and administrator and legislator buy-in across state agencies and among state, regional, and local education agencies. In many states, the growing focus on college and career readiness is proving to be an impetus for bringing agencies together to cooperate on data governance. The current push for interoperability of data, and transfer of data across multiple systems and among varied stakeholders, means that those who are making data decisions or advocating for increased data use may not be well versed in the importance of data governance. Cohesive frameworks for interoperability allow these systems to function.

> ***Forum Guide to Data Governance***
>
> The *Forum Guide to Data Governance* (**https://nces.ed.gov/forum/pub_2020083.asp**) highlights the multiple ways that data governance programs can benefit education agencies. It addresses the management, collection, use, and communication of education data; the development of effective and clearly defined data systems and policies to handle the complexity and necessary protection of data; and the continuous monitoring and decision making needed in a regularly shifting data landscape. The guide also features 12 case studies from state and local education agencies that have implemented effective data governance programs.

All of these issues mean that data governance teams need to be continually adaptive to changing needs and unexpected situations. One important activity for a P-20W data governance board is the documentation of all the data collected for CCR uses. The U.S. Department of Education's Privacy Technical Assistance Center (PTAC) recommends publishing a data inventory on all data that are collected by an agency, along with how those data are used. For CCR purposes, such a data inventory is likely to cross agency lines, so the inventory report may need to include data owners as well as data users. For data users, such an inventory also could include notes on data quality issues. To avoid multiple agencies engaging in duplicative efforts around reporting, inventory reports also may include data usage.

User Support

Education agencies need to train data users in how to use the data properly. In general, increased usage will promote better quality data over time, as more eyes on the data can help detect data entry errors and potential system issues that may be causing data errors. While some CCR datasets are clear and are used in multiple educational settings, the complexity of some dispositions and behavior data may make it more difficult initially to ensure good quality data in the absence of clear or uniform measures and metrics. On the technical side, there also are special considerations for introducing CCR-specific tools and interactive reports.

SEAs and LEAs can implement strategies to help parents and students access CCR data to explore different pathways of success. For example, an interactive dashboard could help parents and students explore and compare options for attending college, pursuing training programs, or embarking on their careers immediately after high school. Such a dashboard might provide a trajectory of future career development and earning information for each of these pathways, providing parents and students with important information for decision-making.

Students' perspective also can offer valuable insights into CCR data use. Agencies should consider how students can use their own data to be better informed. Students need to understand the real-world applications of all content and skill areas and the educational requirements of careers, including coursework and degree requirements.

A strong P-20W data governance system is responsible for identifying stakeholders and ensuring appropriate communications and training are available for stakeholders. An important concern for P-20W data governance activities is the inclusion of students and/or parents in selected meetings or planning activities. Although expanding the number of individuals at the table for data governance discussions may result in some inefficiencies, in states or districts offering online learning plans or e-transcripts, students (and their parents) are primary beneficiaries of these tools, and they may have useful insights to share in discussions of cross-agency data sharing.

Privacy, Security, and Transparency

Effective data privacy and security practices, along with proactive communications with stakeholders, are essential to the successful use of data for CCR. Effective communications allow education agencies to anticipate and respond appropriately to parents and other stakeholders who may raise legitimate concerns about student privacy and how student-level data are being used. It is important that SEAs and LEAs carefully follow all requirements of state and federal privacy laws, implement sound security measures, use the data only for the stated purposes for the data collection, and be transparent about how the data are being used and protected.

Transparency entails engaging all stakeholders through appropriate communications and making all information related to data use, data privacy, and data security publicly and easily accessible on agency websites.

Privacy Technical Assistance Center

The U.S. Department of Education's Privacy Technical Assistance Center (PTAC) offers useful online training modules, guidance documents, and other student privacy resources outlining best practices for protecting student privacy. These resources address how to balance transparency and privacy in education data and provide information on the Family Educational Rights and Privacy Act (FERPA).

The online training course "FERPA 201: Data Sharing under FERPA" (**https://studentprivacy.ed.gov/training/ferpa-201-data-sharing-under-ferpa**) covers the basics of data sharing under FERPA, with a focus on the FERPA exceptions under which data may be shared and covering expectations regarding security and privacy of education data.

Chapter 3: College and Career Readiness (CCR) Data Reporting and Use

This chapter details considerations for reporting and using CCR data at the federal, state, and local levels of education, in research, accountability, and workforce development.

Reporting CCR Data

Education agencies are tasked with reporting CCR data to different stakeholder audiences including within state and local education agencies (SEAs and LEAs) at all levels, policymakers, educators, students, parents, and community members. CCR data may come from K-12, postgraduate, or workforce agencies. When reporting data to stakeholder groups, important questions for SEAs and LEAs to consider include:

- What questions can be answered with existing data and what data are missing?
- What are the stakeholders' key priorities?
- What are the future trends or questions that the data will need to answer?
- What are the limitations on what the available data can tell us that need to be communicated to stakeholders along with the results?

Compiling data and sharing it out to stakeholders without first asking these questions can lead to an inefficient use of agency resources and may impede the clarity and usefulness of the messaging to stakeholders. By considering these questions, education agencies can develop reports efficiently and tailor them to stakeholder needs.

Examples of typical questions from education stakeholder groups and the corresponding indicators are provided in the table below:

Stakeholder Group	Typical Questions	Indicators
Local Education Agencies (LEAs)	What paths do our students take after graduation? How well are we preparing students for success? What percentage of our students take remedial or developmental college coursework and how may this influence our curricula? Are our students on track for graduation? Are we preparing our students to be accepted into the postsecondary programs of their choosing? How well are we preparing students to receive scholarships and other financial aid?	Postsecondary education admissions rate and attendance; participation in job training programs; military service; workforce data; graduation rates; college readiness assessment scores; industry-recognized certificates; dual credit; postsecondary course-taking data; grade point average (GPA); graduation rates; scholarship awards; attendance; workforce data; financial aid;
Higher Education Institutions	How academically prepared are students when they arrive?	Remedial courses-taking rates; course-taking data; GPA
State Education Agencies (SEAs)	What data do we need to meet federal reporting requirements? What is the success rate of state-funded programs?	College attendance; state higher education funding; program results; dual credit participation and completion;
Employers	How prepared are students to enter the workforce? How many students have completed training programs or internships? How were the students' attendance and social skills?	Graduation rates; course-taking data; training and internship completion rates; industry credentials awarded; K-12 and college attendance; dispositions and behaviors data
Parents and students	Is the student on track to graduate on time? Are they prepared to be accepted into the postsecondary programs of their choosing? Will they qualify to receive scholarships and other financial aid?	Course-taking data; GPA; attendance; graduation rates, ACT Scores, industry-recognized certificates; college hours
Policymakers	Are the K-12 CCR programs the state is investing in impacting students' college and career outcomes?	College enrollment; workforce data; military service; program results

Stakeholder Group	Typical Questions	Indicators
Community Organizations	How can we work together with the schools or the districts to help students prepare for college and careers? What is the role of community organization in improving student's CCR? How do levels of readiness vary for different subpopulations of students and within a region?	Graduation rates; training and internship completion rates; number of training and internship sites; number of participants finding employment aligned with training or internship; CCR outcome data; FAFSA completion rates; scholarship data (e.g., total number of scholarships awarded, total money awarded, total number of students receiving at least one scholarship); student visits/use of the College and Career Centers.
Researchers	How do we accurately measure CCR? What factors can predict a student's CCR? What policies and decisions can we derive from CCR-related research? What metrics are predictive of student readiness for advanced coursework (e.g., Advanced Placement (AP) courses, International Baccalaureate (IB) courses)?	Relevant K-12 data, college, and workforce data; other P-20W data elements
Wisconsin Department of Public Instruction	Students who transferred between schools within a district (within-district mobility) or between districts in a single school year. Also considered the inverse of full academic year.	No

Reporting on CCR data should communicate the data's complexities to stakeholders, such as the examples listed below.

- Many states are adopting new academic standards and assessments. These changes may make it difficult to conduct valid comparisons of outcomes from year to year until accountability systems, standards, and assessments are stable. For example, the impacts of the COVID-19 pandemic continue to affect the comparability of data from year to year.
- New indicators used for CCR accountability may need a year or two of use before data collection and verification processes produce a quality dataset.
- The increase in the types of postsecondary credentials that individuals can earn, as well as the growth in proprietary education providers, may make it difficult for agencies to capture all postsecondary outcomes for their K-12 students accurately. As these outcomes increasingly are used to measure the effectiveness of CCR programs, it is important for users to understand that incomplete data in this area may produce a limited picture of students' postsecondary attainment. Clarity is needed on the percentage of students for whom it is possible to determine outcomes accurately. For example, if an agency can determine outcomes for students who enroll in in-state, public postsecondary institutions only, the agency needs to be clear what percentage of students is captured in these data and what percentage is not.

- It also is possible for students to earn multiple certificates or enroll in multiple postsecondary education or training programs, or even complete a credential through dual credit while in high school, resulting in the potential for duplicate counts. Data users would benefit from knowing the extent to which agencies can control for possible duplication of counts.
- Similar limitations exist with workforce data, and these limitations need to be communicated to data users. Workforce data may be difficult to match to data on K-12 students, and drawing accurate conclusions about workforce outcomes requires an understanding of the relative completeness of the available data.

When providing digital interactive CCR reporting tools and dashboards to the public or specific audiences, consider notifying users of any special considerations to keep in mind when interpreting their findings, such as

- the difficulty of making comparisons in CCR across states due to different requirements and metrics; and
- accounting for regional variation in the labor market, if aggregating CCR data to the state-level.

By providing these caveats, the audience can interpret and use interactive tools and dashboards more accurately and point decision-makers to making changes to support better data collection. For online CCR tools geared toward students and families, providing and promoting a robust technical user support system can help ensure that counselors and teachers are not over-burdened with requests to provide technical support.

Key Uses of CCR Data

Educator Support Systems to Address Student-Specific Needs

Educator support systems provide information and tools that teachers, counselors, principals, administrators, and educator preparation programs need to prepare all students to be college and career ready. These systems support educators in developing pedagogical skills and knowledge, as well as identifying which students need additional support in meeting their education goals or which students may be ready for more challenging coursework. Educator support systems may include early warning systems (EWSs) and assessment systems that provide diagnostic reports, coupled with an online professional development resource system for educators.

EWSs are data-based tools that use specific indicators to identify students who may not be on track to meet their education goals, including students who are at risk of dropping out of school. These indicators typically include attendance, discipline incidents, grade point average (GPA), and course-taking. Perhaps the most important evaluation needed for EWSs is determining whether the analytic model is predicting the at-risk students appropriately. To do this, EWSs may need to pull data from other sources. For example, if a student is assigned a dropout status in a student information system (SIS), automated checks could be in place to determine whether that student had been flagged in an EWS. Continuing to increase the amount of pre-high school data available in EWSs, such as adding attendance levels and test results from elementary and middle school, will allow for earlier identification of students needing augmentation or intervention services.

While EWSs once lagged significantly, they have improved vastly in recent years, providing up-to-date information for agency use. Using EWSs to guide schools in providing interventions and helping students get back on track for on-time graduation supports agencies' CCR goals. Additionally, data from an EWS can be linked with postsecondary education or workforce data as part of a feedback loop to reflect back on the accuracy of the EWS and suggest improvements.

> ***Forum Guide to Early Warning Systems (EWSs)***
>
> The *Forum Guide to Early Warning Systems* (**https://nces.ed.gov/forum/pub_2019035.asp**) provides information and best practices to help education agencies plan, develop, implement, and use an EWS in their agency to inform interventions that improve student outcomes. The document includes a review of EWSs and their use in education agencies and explains the role of early warning indicators, quality data, and analytical models in EWSs.

Incorporating additional CCR-related items into an existing EWS can help transform a dropout prevention system into a CCR success system. These indicators might include presence of an Individualized Learning Plan (ILP), preparation in a career and technical education (CTE) Career Pathway program, or Advanced Placement (AP) course-taking or dual enrollment. EWSs also might be linked to an ILP system to allow counselors to be alerted when a student's GPA is falling below the threshold needed for entrance into the student's college of choice. Milwaukee Public Schools (MPS) (WI) uses its early warning indicators system metrics to identify if students are on track for proficiency on state assessments beginning in third grade. The LEA used a combination of research and MPS's own data analysis to develop an indicator based on attendance, absenteeism, failing grades, and GPA.

Online professional development resource systems allow teachers to conveniently obtain timely and on-demand assistance to expand and refine their instructional repertoire to address their students' needs. Administrators and teacher preparation programs can use these systems to provide CCR-targeted courses to teachers, monitor the delivery of the coursework, and collect feedback data about the effectiveness of the professional development offerings. The Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) initiative is one of the largest programs focused on increasing the CCR of low-income students in communities nationwide. GEAR UP typically includes professional development for counselors and teachers as a primary component of the program.[28]

Implementing learning management systems that seamlessly link content, assessments, learning resources, and professional development resources can improve instruction and educational outcomes for all students. However, sophisticated systems in themselves are tools that are beneficial only when used effectively. SEAs and LEAs can develop tools with nearly perfect predictability, but use of the information generated by these systems is critical. For instance, agencies should have a plan for translating EWSs to action items, such as establishing what services are in place to respond to students based on how they are categorized in the system.

[28] National Council for Community and Education Partnerships. (n.d.). *About GEAR UP*. Retrieved December 19, 2024, from **https://www.edpartnerships.org/about-gear-up**.

Create Postsecondary Feedback Loops

SEAs and LEAs have developed and implemented CCR academic standards, aligned assessments, and support programs to improve the readiness of high school graduates for college and career. Timely data are needed to measure the effectiveness of these efforts in improving student CCR. One of the most commonly used outcome measures for determining the effectiveness of a comprehensive CCR program is the percentage of high school graduates who enroll in a postsecondary education program within a designated time interval and successfully complete credit-bearing, non-remedial coursework. Another possible outcome measure is the percentage of high school graduates who secure employment in the field of their choice after successfully completing postsecondary degree programs or workforce training programs, data that are sometimes collected through LEA surveys of graduates. Measuring progress on these outcome goals requires data from postsecondary and workforce agencies. A postsecondary feedback loop, which can vary across institutions, is the process in which postsecondary institutions share timely information with K-12 education agencies regarding the enrollment and academic achievement of high school graduates enrolled at their institutions.

One barrier to using these indicators effectively is the inability of many SEAs to easily access postsecondary outcome data for their high school students from private or out-of-state institutions of higher education. Some states have chosen to form consortia with neighboring states to share data; others subscribe to the services of the National Student Clearinghouse (NSC) to obtain data on their high school graduates who attend institutions that participate in the NSC. This registry monitors students' enrollment, sustainability, and degree completion longitudinally in the vast majority of postsecondary institutions, including universities, technical colleges, and private career and technical schools.

- Similar to other states, the New York State Department of Education (NYSDE) obtains postsecondary enrollment data from NSC. Data then are shared with all districts and high schools so they can monitor their graduates and outcomes. NYSDE publishes the postsecondary enrollment data as part of the State Report Card and Every Student Succeeds Act (ESSA) accountability plan.
- The South Dakota Department of Education also has an agreement with NSC to run a student tracker query three times a year. Those data are stored in the statewide longitudinal data system (SLDS) to meet reporting requirements across Perkins, Accountability, and Special Education.
- The Nevada Department of Education uses NSC for the required EDFacts reporting and share the NSC data with the Nevada system of higher education.

Notably, some students opt out of inclusion in data sets like the NSC registry, which can affect the completeness and analysis of data.

To best support students, parents, teachers, counselors, and local administrators, indicators should be assessed for their predictive potential. It is not enough for an indicator to be useful for program evaluation; stakeholders need to know what the indicators mean and how they contribute to the overall picture of readiness. Aligned longitudinal data across K-12 and postsecondary institutions allows for predictive analytics.

A key way to assess indicators for their predictive potential is to measure the relationship between CCR scores and the outcomes they intend to proxy for. For example, risk levels defined by Fairbanks North Star Borough School District's (AK) advanced EWS are included as comparisons or filters within a few of the district's data dashboards, such as the dropout dashboard. The dashboard shows dropout rates by risk level and includes predictive data like the percentage of students that were identified as high risk and the percentage of dropouts that were identified as high risk. This helps improve the predictive value of the advanced EWS. Milwaukee Public Schools looks at attendance, grades, and ACT scores when gauging a student's readiness for college. These metrics were selected based on data and metrics that colleges identified as criteria for participating in pre-college coursework, such as dual enrollment courses.

Students benefit from understanding the specific achievement targets needed to succeed in college and career. SEAs and LEAs can help them understand those targets based on outcomes data for students who graduated before them. K-12 agencies strive to understand the approaches that work best in preparing students for high school graduation and postsecondary education or workforce training, while postsecondary institutions benefit from understanding the K-12 student indicators that contribute to success in college. However, limited capacity and funding is a challenge for some SEAs and LEAs, and not all agencies engage in data modeling/predictive analytics. Continued efforts are necessary to overcome existing barriers in sharing data among SEAs and private or out-of-state institutions of higher education.

Metrics, Accountability, and Continuous Improvement

It is important that CCR standards, assessments, and instructional support programs developed by SEAs and LEAs provide a firm foundation for continuously improving student outcomes as well as satisfy legislated accountability requirements. Resources can be used most efficiently when accountability reporting measures also are useful for monitoring students' CCR. Increasingly, education agencies are incorporating CCR indicators in their accountability systems and reporting. Some of the states that include CCR in their accountability plans include New York, Montana, and Washington. Additional examples are described below:

- Hawai'i includes proficiency, on-time graduation, and college-going data on its ESSA Report Card for federal accountability and on its Strive HI reports for state-level accountability.
- Kentucky's accountability model includes postsecondary readiness. The Postsecondary Readiness Indicator is one of six state indicators in Kentucky's Accountability System. To demonstrate postsecondary readiness, high school students must earn a regular or alternative high school diploma or be classified as a grade 12 non-graduate and meet one type of readiness–academic or career.
- In Louisiana, the Strength of Diploma Index counts for 25 percent of the High School Performance Score. The amount of points earned in the index will vary based on what a student earns with regard to Industry-based credentials (basic or advanced), dual enrollment, AP, College Level Examination Program (CLEP), or International Baccalaureate (IB) credit.

- In Iowa, the Postsecondary Readiness Index included in the accountability system is in the process of being updated to be more outcome-based. Three main indicators included in the forthcoming index are the percent of students participating in work-based learning in high school, percent of students who obtain an industry recognized credential (IRC), and the percent of students earning college credit while in high school.
- CCR is not included in Virginia's federal accountability plan but is included as an indicator for the state-level accountability system.

Continuous improvement measurements, like program evaluation measurements, require multiple years of data. Analytic tools are useful when they can combine students' K-12 information with the postsecondary and workforce information. It also is helpful to calculate percentages to reflect the degree of change that occurs over time to facilitate tracking of improved outcomes.

Users may provide feedback on how easily the indicators can be understood and the accessibility of the reports. Policymakers and administrators also may want to evaluate how well the reports are being used to support continuous improvement efforts, rather than simply meeting reporting requirements.

Maximizing Career Opportunities for All Students

One of the goals of K-12 education is to prepare students for successful careers aligned with individual student interests and anticipated workforce needs. Opportunities available for students may include

- internships/apprenticeships;
- industry recognized credentials;
- worksite opportunities;
- involvement on advisory committees;
- early introductions to potential career paths; or
- nonprofit youth organization or other club memberships that provide experience in areas like business and finance.

To align these opportunities with the needs of the labor market, the education sector needs ongoing communications with the workforce sector. Education agencies need current and projected labor market information from workforce agencies, including information on anticipated high-demand careers and the education qualifications needed for success in those careers. On the supply side of the labor market, education data can provide information about how many students are being prepared to work in important sectors and jobs within the workforce.

The level of education needed for students to be career ready will depend on their specific career goals. Not all careers require a 4-year postsecondary degree; many job openings require a sub-baccalaureate certificate, industry certification, or associate's degree. For careers that require 4 years or more of postsecondary education, some argue that a K-12 institution's accountability for a student effectively ends when the student graduates from high school and is capable of successfully completing postsecondary credit-bearing courses. For careers that require less than a 4-year postsecondary degree, K-12 CTE programs provide important preparation for employment and workforce training.

Most CTE programs of study require additional postsecondary training to build on the technical training acquired in high school. Thus, cooperation between K-12 and postsecondary agencies is needed to provide students with a well-defined sequence of coursework necessary to complete a specific career pathway. In addition, since most CTE programs of study span high school and postsecondary education, CTE classes in high school should be of sufficient academic rigor to prepare students for the postsecondary education they need to earn a credential in their chosen careers.

SEAs and LEAs continue to establish reliable methods for connecting education and workforce data in order to improve the quality and completeness of available data, thereby improving the accuracy of the analytics. Administrators and policymakers may want to share reports on CTE program effectiveness as a way to demonstrate the potential for strong CTE programs. To best assist students (and their parents and counselors), predictive analytics on specific targets students should achieve to succeed in particular career pathways could be calculated and made available to students.

The Global Workforce

CCR efforts can play an important role in preparing students to succeed in the global workforce by equipping students with the appropriate skills. These include:

- **Technology skills:** CCR efforts often include technology education, ensuring that students are proficient in using digital tools and platforms. In the global workforce, technological literacy and data literacy are essential for collaboration, innovation, and staying competitive in a digital economy. Computer science programs of study are a cornerstone of CTE programming. Understanding computer science and earning computer science credentials prepares students to succeed in a globalized economy.
- **Language proficiency:** Many CCR initiatives emphasize language proficiency, recognizing the importance of effective communication in the global workforce. Language skills enhance students' ability to collaborate, negotiate, and communicate with individuals from different linguistic backgrounds. Some SEAs and LEAs administer awards or verify students' proficiency in two or more languages as part of their CCR diploma additional requirements.
- **Work-based learning (WBL):** While WBL is not specifically international in focus, preparing students with internships and other hands-on job training before they graduate high school can help equip them to succeed in the global workforce.
- **Industry standards and certifications:** CCR efforts can align with international industry standards and certifications, ensuring that students are not only prepared for local demands but also recognized globally for their skills and qualifications.
- **Career pathways:** Pathways help students learn many aspects of an industry, including its unique economics and global perspectives.

- **Advanced academics:** Some advanced academics program curricula, included in many CCR efforts, encourage students of all ages to think critically and challenge assumptions, incorporate quality practice from research and a global community of schools, and encourage students of all ages to consider both local and global contexts. These programs also develop multilingual students.

In 2024, the School Pulse Panel (SPP) Survey, conducted by the National Center for Education Statistics (NCES) within the U.S. Department of Education's (ED) Institute of Education Sciences (IES), found that 62 percent of public high schools reported including CCR components in their graduation requirements.[29] Many SEAs and LEAs have incorporated themes of civics and preparation for adult life in their CCR strategies. In turn, graduation requirements sometimes include coursework in financial, technical, and civic literacy, world history and cross-cultural understanding, and other CCR-capacity building measures. Examples of agencies that have implemented such requirements are described below:

- Many states are considering financial literacy requirements for their graduates. For example, in Kansas, USD 204-Bonner Springs/Edwardsville Unified School District (KS) requires a personal and consumer finance course. Additionally, the state of Kansas recently implemented a requirement that all students take a financial literacy course.
- Kentucky requires graduates to
  - » achieve 60 percent or higher on a 100-question civics exam, administered in partnership with the University of Kentucky;
  - » complete a financial literacy standards program or course; and
  - » demonstrate performance-based competency in technology.
- Montana requires the completion of civics or government coursework and economics or financial literacy within the state's social studies, mathematics, or CTE curriculum.
- In Virginia, students are required to take economics and personal finance courses.
- Washington State requires civics coursework.

[29] National Center for Education Statistics. (September 2024). *School Pulse Panel: Surveying high-priority, education-related topics.* Retrieved December 19, 2024, from **https://nces.ed.gov/surveys/spp/results.asp**.

Chapter 4: Case Studies from State and Local Education Agencies (SEAs and LEAs)

This chapter features case studies from education agencies about their experience with college and career readiness (CCR), challenges faced, best practices used, and lessons learned.

Delaware Department of Education: CCR Data Collaboration with the University of Delaware

Delaware's College and/or Career Preparedness Measure

In Delaware, CCR is defined by the statewide accountability system, known as the Delaware School Success Framework (DSSF). The DSSF includes a College and/or Career Preparedness (CCP) measure that refers to the percent of 12th-grade students who demonstrate success in one or more designated CCP metrics. For purposes of the CCP measure, a student is assigned one point for demonstrating successful attainment of at least one college readiness or career readiness metric, and 1.1 points for successfully attaining one or more metrics from both categories. College readiness metrics include satisfactory performance on the SAT Essay or in Advanced Placement (AP), International Baccalaureate (IB), or dual enrollment programs. Career readiness metrics include satisfactory performance on the Armed Services Vocational Aptitude Battery or in career and technical education (CTE) dual enrollment coursework, attainment of an industry-recognized credential (IRC) or a Certificate of Multi-Literacy, or successful completion of a co-op education or work-based learning course.

Moving from Static Reports to Interactive Data Dashboards

In partnership with the Delaware Department of Education (DDOE), the University of Delaware's Center for Research in Education & Social Policy (CRESP) is developing a new interactive CCR dashboard that will track and report relevant data to Delaware's LEAs. Compared to the static CCR reports that traditionally have been prepared annually, the interactive dashboard will allow for a more comprehensive and up-to-date overview of available CCR data and facilitate easier sharing of information within and between the SEA and school districts.

An advantage of using the state's accountability CCP measure to assess CCR in Delaware is the verification process the data undergo, helping to ensure they are accurate and consistent from year to year, which supports longitudinal tracking of the state's CCR progress. In addition to the CCP, CRESP is incorporating other data into the CCR dashboard, including middle school and 11th-grade data and college enrollment data from the National Student Clearinghouse (NSC). This means users will be able to view multiple data points along students' K-12 educational journeys and connect them to postgraduation outcomes. The ability to layer and compare various leading and lagging data in an interactive dashboard will enable educators and other SEA and LEA staff to see a more nuanced overview of CCR in Delaware, such as how accurately CCR indicators predict postgraduate success. CRESP hopes the dashboard will encourage a greater recognition among CCR data stakeholders that while metrics are useful for estimating how well students are prepared for life after high school, no single metric can determine whether students will succeed in their chosen college or career paths. For example, the dashboard will show how many students do not attain a point for college readiness in the CCP measure but go onto enroll and succeed in college. Promoting both strong data quality in CCR data reporting and strong data literacy among CCR data users helps ensure the most effective use of CCR data.

One of Delaware's unique characteristics is its small size, which affects CCR data practices in the state. There is significant collaboration among LEAs, and between LEAs and the SEA. Delaware's CCR data practices entail different agencies checking data quality at various points, between LEAs compiling their own data, to DDOE receiving and reviewing the data, to CRESP receiving statewide data from the SEA and conducting additional verification. Having three different perspectives involved in data verification means that each year, the state's CCR data are refined further and better understood.

When CRESP receives data from the SEA, they are stripped of student names and DDOE's student identification numbers. Instead, DDOE creates new proxy student identification numbers for CRESP's use. Additionally, CRESP is careful to ensure that its new dashboard does not inadvertently reveal personally identifiable information (PII) about small subsets of students, always erring on the side of caution if there is any concern about a risk to student data privacy.

Looking ahead, CRESP would like to see a movement toward more comparable CCR data standards across the United States, such as broader use of the School Courses for the Exchange of Data (SCED) classification system. Having more uniformity in course coding would allow for a richer understanding of how coursework relates to students' CCR, beyond proficiency in mathematics and English language arts.

Challenges and Opportunities for Career Readiness Data

While CRESP can compile numerous data on students' college-going and postsecondary course-taking trends, career readiness data are more challenging to track. Delaware's CCP measure incorporates a definition of career readiness, and education agencies may reasonably assume that experiences like internships and CTE coursework help prepare students for careers, but connecting CCR indicators with students' career outcomes is difficult for several reasons. For example, tracking enrollment in colleges and universities, both within and out of the state, involves a more finite set of institutions than tracking employment does.

One challenge is that the Delaware Department of Labor (DDOL) uses Social Security numbers to track employment data, while DDOE uses its own student identification numbers for student data; therefore, these data cannot be easily matched. In some specific circumstances, a third state agency, Delaware Health and Social Services (DHSS), which has access to Social Security numbers and student identification numbers, can conduct data matching between the two. The SEA and LEAs began collaborating with DHSS on COVID-19 relief programs in 2020, leading to a multi-year partnership during which the agencies worked through challenges and gained confidence in their ability to collaborate.

Another obstacle to tracking career outcomes is that when Delaware's graduates leave the state to work in nearby bordering states after high school, they no longer are in the purview of the DDOL. However, Delaware recently joined a consortium comprising multiple states in the region that will share data across state lines to better track high school graduates' employment. The participating states signed a data sharing agreement facilitated through the State Wage Interchange System (SWIS).

Delaware is seeing progress in interagency and interstate collaboration and data sharing, which may benefit efforts to measure career readiness outcomes in the future.

Fairbanks North Star Borough School District (AK): Conveying the Complexities of CCR Data

Developing a College Readiness Data Dashboard

In Alaska's Fairbanks North Star Borough School District (FNSBSD), CCR data practices have evolved in response to overarching changes to CCR approaches at the federal, state, and local levels. For example, state requirements that students take college readiness or career readiness assessments have been added or removed at different points in time. Today, the district views students' performance on the Alaska System of Academic Readiness (AK STAR) assessment, and to a greater extent, achievement of the Alaska Performance Scholarship (APS) as indicators of college readiness. Additionally, the district's CTE program provides opportunities for students to acquire the knowledge and skills they need to pursue their career path of choice.

In recent years, the district has continued to refine how it works with and shares CCR data, and the agency recently developed a forthcoming college readiness dashboard, which will be featured alongside a robust selection of other public-facing district data dashboards that provide enrollment, assessment, discipline, attendance, graduation, and dropout data.[30] FNSBSD uses data dashboards to make data available in a visual format that is easy for stakeholders to access and use. Through dashboards, the district delivers reports and data files, tailored for end users, directly into the hands of the school board members, parents, community members, and other stakeholders who need them. The forthcoming college readiness dashboard will allow users to view data related to how many students are meeting college readiness standards, including

- maintaining a 3.0 grade point average (GPA); or
- meeting requirements to receive the minimum APS award amount. The APS is a state merit scholarship that provides students with pathways to receive one of three levels of scholarship funding to attend Alaska colleges based on GPA or test scores, and the specified APS curriculum.

The dashboard, which initially will include the past 10 years of relevant data and will be updated annually, also will have an option to compare college graduation rates by school and district. FNSBSD dashboards include built-in, multilayered suppression logic and rules to protect students' data privacy.

[30] Fairbanks North Star Borough School District. (n.d.). District Data Dashboards. Retrieved December 19, 2024, from **https://www.k12northstar.org/departments/research-accountability/data-dashboards**.

Addressing Nuances in CCR Data

FNSBSD is committed to making ongoing improvements to the usefulness and accuracy of its CCR data. The district recognizes nuances that should be taken into consideration when using data to predict and measure students' postsecondary success. FNSBSD strives to address the following complexities in CCR data through the development of sophisticated data visualizations and remaining cognizant of CCR data considerations and challenges:

- CCR standards strictly defined through the state's grade level standards may be so rigorous that the outcomes underestimate students' potential to succeed in college or career paths. Some students who do not meet CCR standards do successfully enroll in and graduate from college, as the district has found through data analysis. Similarly, while rigorous CCR standards may help ensure that students who enroll in college are well-prepared to succeed without remediation, students who embark on career or workforce training paths directly after high school graduation may be well-equipped to succeed professionally, even if they did not meet CCR standards.
- Readiness and success are inherently intertwined yet distinct aspects of CCR: Students' anticipated CCR cannot be evaluated for accuracy without also accessing their college and career outcomes. Accessing data outcomes is necessary to evaluate and improve CCR standards.
- College graduation rates only reflect outcomes for students who were accepted into a given college; therefore, when comparing college graduation rates, it is important for data users to recognize that these graduation rates reflect different cohorts and potentially different levels of academic rigor.
- As in many agencies, FNSBSD's CCR data centers on college readiness, in part because college enrollment and graduation data are accessible through postsecondary institutions and the National Student Clearinghouse. Tracking students' career paths after graduation is significantly more challenging due to the limited data available.
- There are important distinctions between college readiness and career readiness, and career readiness cannot be fully understood without consistent standards in place. One CTE-focused school in the district is developing a workplace readiness metric, which potentially could be expanded for district-wide use.

Using CCR Data to Support Students

FNSBSD is committed to using CCR data to support students and educators. For example, quality CCR data can inform where academic interventions are needed and help ensure that students stay on track to meet requirements for college enrollment, career paths, and state scholarships. Other priority issues in the district, including attendance and reading, are not explicitly CCR standards, yet these standards were developed in relation to CCR. Looking ahead to the future uses of CCR data, FNSBSD is considering developing a CCR indicator that uses the same approach as the district's highly accurate Advanced Early Warning System (EWS), but instead of using measures like GPA and attendance to predict risk of high school dropouts, it would predict college success.

Through its work with CCR data and the college readiness dashboard, the district recognizes that each student's path to CCR varies, reflecting their unique strengths, challenges, interests, and goals.

Great Falls Public Schools (MT): Using Data to Strengthen College and Career Exploration Programs

Community-Based College and Career Partnerships

Great Falls Public Schools (GFPS) in Montana defines CCR as providing students with a successful transition to community, college, and career through an established plan and thoughtful career guidance. The district's approach to CCR reflects this commitment to community through its emphasis on community-based partnerships that offer college and career exploration opportunities to students. A strength of GFPS is recognizing opportunities to partner with local institutions–including a university, community college, and local industry–and bringing those visions of academic and work-based learning program partnerships to fruition. Additionally, the district uses data strategically in the development and ongoing refinement of such programs, continually striving to better serve the needs of GFPS students, including about 3,500 high school students across three high schools.

One recent example of this work in action is the district's implementation of the Build Montana program model. After seeing the success of Build Montana in other parts of the state, the GFPS CTE department decided the program, designed to introduce secondary students to the construction industry, should be made available to GFPS students. The program connects students with local construction-related businesses to receive training in heavy machinery and equipment, safety, and business practices. Within the span of about one semester, GFPS CTE staff had

- written a Build Montana program plan;
- designed the program;
- implemented a new career pathway;
- recruited students;
- held meetings with parents, school counselors, and teachers;
- engaged community stakeholders; and
- launched a heavy machinery pilot program with 10 students.

Notably, the numerous local businesses participating in the Great Falls Build Montana program normally are one another's competition in the construction industry, but they came together as equal partners to support GFPS students and invest in the development of potential employees. GFPS leaders encourage other LEAs to seek similar connections and partnerships with local community colleges, universities, and businesses, and to approach potential partners with a collaborative mindset. Community partnerships can do more than serve the needs of the education agency; they also can add value to local partners. In another example of a reciprocal partnership between the K-12 school district, a higher education institution, and local industry, there was a demand in Great Falls for more employees trained in structural welding. In response to that need, the school district partnered with a local college that now offers structural welding training to GFPS high school juniors and seniors. Moreover, GFPS began offering prerequisite coursework that equips students with the foundational knowledge needed to participate in the college's training program.

GFPS's CCR exploration opportunities include college-oriented programs, as well. For example, the One-Two-Free dual enrollment program through the Montana University System gives juniors and seniors the opportunity to earn college credit in high school. Additionally, through a partnership with the local medical school, first-year medical school students are paired with high school juniors and seniors to introduce them to the field of health sciences. Whether approaching academic or career exploration opportunities, GFPS values its role in providing students a chance to explore college and career paths, take risks, and even fail with a safety net. Students can take college classes and explore whether they like a subject without taking on significant financial obligations, or try out career paths, knowing that if one does not prove to be a good fit, GFPS teachers, counselors, and career advisors will guide them in changing course.

Using Data to Support CCR Programs

While the district has offered programs like pre-apprenticeships and a welding cohort for more than a decade, through the collection and use of data, its college and career exploration program offerings have evolved and grown dramatically in the past 2 to 5 years. The district carefully reviews program data to determine how to pace program growth and where to offer new academic experiences and career pathways. In turn, as programs grow, they generate more data to inform future decision-making. Each January, the CTE program advisors call recent graduates directly, when possible, or their parents, to interview them about their postsecondary paths. GFPS wants to know if they continued to pursue the career pathways they began in high school, joined the military, enrolled in college, or went into the workforce.

Just as GFPS sees value in students exploring college and career paths and determining which ones are not the right fit, the district values program data whether it reflects more or less desirable outcomes. District leaders understand the importance of learning from each experience, even if a program is not considered successful. As a result of these efforts, there are more opportunities for students to explore college, career, or a combination of both paths earlier in their academic careers than ever before, potentially leading students to

- enroll in college with enough credits to enter as a sophomore, eligible to take coursework above the general education requirements;
- try one or two career pathways to learn more about what careers they are, and are not, interested in before graduating from high school; or
- secure post-graduation full-time job offers while still in high school.

Metrics the district uses to evaluate its college readiness efforts include ACT scores and Measures of Academic Progress (MAP) scores, which predict success on the ACT. For career readiness, the Armed Services Vocational Aptitude Battery (ASVAB) results can help students identify their capacity for possible military careers and more generally understand their career aptitude. The CTE department also relies on informal data to evaluate the success of its programs, noting the importance of conversations and relationships. Students talk with teachers, advisors, and school counselors to think through their interests and options; in turn, the staff talk with one another to share information and strategies.

Some of GFPS's data sharing practices also are informal: The CTE program meets with a variety of educational partners each month, ranging from school counselors to local colleges, sharing program information and giving updates on what data the department is collecting, including tracking program participation in pre-apprenticeships and internships. The district also has established formal data sharing agreements with the two local higher education institutions with whom it partners. Data sharing practices meet the requirements of the Family Educational Rights and Privacy Act (FERPA), and any data shared out do not contain students' PII.

Challenges and Goals

The biggest challenges the CTE department faces are securing enough teachers to support a new program and reaching enough students who wish to participate. Particularly for new programs, connecting with students who may be interested in unique career paths can be difficult. School counselors can help, but this places a burden on them to learn about the district's new programs as quickly as they are developed. Fortunately, for established career pathways and programs, word of mouth can be a strong source of student interest. Finally, some of the programs that involve college partnerships require students to be on campus 1 to 2 weeks prior to the start of the K-12 academic school year, which can be challenging logistically and requires advanced planning.

The district's goals include implementing some new program ideas and building up some of the smaller programs, including a forthcoming welding and metal fabrication program and a small cybersecurity program. With a shortage of teachers throughout the region and country, GFPS also is focused on encouraging more students to explore teaching career paths. A unique pathway the district is pursuing is sports officiating, a skill that students can use whether they pursue college, military, or career paths after graduation. Sports officiating equips professionals from any sector to provide a service to local schools and give back to the community. In all of these CCR goals, the driving force for the district is to focus on what is best for the students, help them figure out their college and career goals, and support them in achieving those goals.

Hawai'i State Department of Education: P-20 Collaboration and a New Workforce Development Branch

The Hawai'i State Department of Education (HIDOE) is the only state in the United States to have a single public K-12 educational system.[31] Several unique factors influence the agency's approach to CCR. For example, college and career opportunities available to students differ across Hawai'i's individual islands. Additionally, the unique migration trends of the states' high school graduates influence, and are addressed by, Hawai'i's CCR strategies. In the context of college-going trends, outmigration refers to students leaving Hawai'i to attend institutions of higher education in the continental United States, while inter-island migration refers to students moving to other islands within the state to attend college. In both cases, HIDOE is cognizant of the ways Hawai'i's local

[31] The US territories of Puerto Rico, Guam, Northern Marianas, and American Samoa have unitary statewide public K-12 systems.

economies, communities, and cultural resources and preservation potentially may be impacted by these trends. Accordingly, HIDOE has a set of objectives that align with the agency's vision for all students to be globally prepared and locally committed. The agency prioritizes understanding and supporting local workforce needs and economic development goals, with a commitment to building the Hawai'i workforce.

Hawai'i P-20 College and Career Readiness Indicators (CCRI) Reports

HIDOE has a long history of collecting and reporting CCR data such as

- assessment proficiency in reading, mathematics, and science;
- graduation and dropout rates;
- Honors Recognition Certificates earned;
- AP performance; and
- National Assessment of Educational Progress (NAEP) results.

These data consistently have been made accessible to stakeholders and the general public in various reports. However, until 2009, there was no single CCR data reporting mechanism. In that year, as a member of the Hawai'i P-20 Council, HIDOE supported a Hawai'i P-20 initiative to begin producing CCRI reports. Hawai'i P-20 is a statewide partnership led by HIDOE, Hawai'i's Executive Office on Early Learning, and the University of Hawai'i (UH) System, and it is supported by an advisory council comprising community, government, business, industry, and education leaders. The P-20 partnership is designed to support data-informed decision-making for the education pipeline from early childhood through postsecondary education and training.

A memorandum of agreement allows HIDOE to provide high school outcome, assessment, accelerated learning, and CTE data to Hawai'i P-20. These data are collected by different offices within the agency and made available to Hawai'i P-20 through secure file transfers. The UH Institutional Research, Analysis, & Planning Office provides Hawai'i P-20 with data that include HIDOE graduates' general enrollment in the state university system, their math and English course-taking during the fall semester following their high school graduation, and their postsecondary completion 6 years after high school. Finally, Hawai'i P-20 also receives nationwide college enrollment data from the NSC. These data are incorporated into annual CCRI reports that provide information on readiness outcomes that show how well high school seniors meet HIDOE's vision of a Hawai'i public school graduate. In CCRI reports, the three categories of indicators include

- high school outcomes;
- nationwide college enrollment and persistence; and
- the high school to college transition in the University of Hawai'i System.

Since the launch of the CCRI initiative, additional indicators have been added to the reports as new data have become available and as the collaborating agencies have refined their understanding of CCR indicators.

Establishing HIDOE's Workforce Development Branch

Although the first career academies were established about 20 years ago through the Smaller Learning Consortium and career readiness has been included in the agency's vision and mission statements for over a decade, it is in more recent years that HIDOE has prioritized broadening its CCR focus to encompass career readiness as fully as it embraces college readiness. HIDOE leaders recognized that the CCR data the agency collects and reports traditionally has been weighted heavily to the academic application, with an emphasis on supporting college-going opportunities. To increase opportunities for those students most interested in directly entering the workforce after graduation, and to better connect students with those opportunities, HIDOE established its Workforce Development Branch in fall 2022. HIDOE leadership envisioned an agency branch that would interface with industry partners to establish work-based learning opportunities for students in conjunction with community partners, employers, postsecondary education institutions, and the military. These work-based learning opportunities may include internships and externships, job shadowing, workplace site visits and tours, training opportunities with industry partners, and other opportunities for students to learn industry standards and practices. The Workforce Development Branch advances the work of HIDOE's CTE team and schools by providing students with authentic workplace experiences in which they can apply and extend the knowledge and skills they learn in school.

Like many SEAs and LEAs, HIDOE faces the challenge of having more limited access to data about students' career paths after graduation than they do college-going data. The Workforce Development Branch continues to explore how to best answer the following questions:

- For students who pursue career paths upon high school graduation, where do they go after they graduate?
- What career readiness indicators can HIDOE collect data for? How would the agency be able to track these data?
- What do HIDOE graduates' career experiences look like? For example, what is their progression from entry level roles to career advancement? Do employers find HIDOE graduates to be well prepared for the workforce?

The Workforce Development Branch also is focused on responding to industry needs and aligning work-based learning experiences with school programs. The branch is reviewing all of the work-based learning opportunities HIDOE schools currently offer students, identifying and supporting relationships with business partners, and identifying gaps in the workforce. The branch is committed to identifying and addressing the gaps in work-based learning opportunities across schools, pathways, and programs of study to improve students' access to these experiences and ensure equitable career readiness opportunities.

Kentucky Department of Education: Using P-20 Data to Support Career Readiness Efforts

Increasing Support for Kentucky's Career and Technical Education Programs

Two key changes have affected the way the Kentucky Department of Education (KDE) has approached career readiness strategies during the past decade. First, CTE became part of Kentucky's accountability system. The Postsecondary Readiness Indicator, one of six state indicators, assesses students' readiness to succeed after graduation, whether in postsecondary coursework (academic ready) or in the workforce (career ready). Indicators of career readiness in Kentucky's accountability system include earning an IRC or certificate, passing a CTE dual credit course with a grade of "C" or higher, passing a state developed End of Program Assessment, or meeting a benchmark in a CTE Cooperative Education, Internship, or Apprenticeship. Second, more recently, the Kentucky General Assembly substantially increased funding for CTE, enabling the state to fund CTE programs at every location where it is offered, which includes state-operated Area Technology Centers (ATCs) and local school district-operated CTE programs. Through these changes, opportunities for Kentucky's career readiness programs have grown, as has public interest in understanding their outcomes.

KDE's Office of Career and Technical Education (OCTE) staffs the ATCs and provides hands-on support to CTE programs around the state. Like many states, Kentucky's communities are varied, and the SEA supports regional approaches to CTE programming, when possible, such as encouraging school districts to combine resources regionally to offer students more CTE opportunities. KDE is committed to ensuring that CTE programs reflect the needs of Kentucky's employers. The agency views career readiness efforts as preparing students not just for current in-demand jobs but also for the job opportunities of the future. OCTE facilitates numerous Business and Education Alignment Teams to bring together business and industry partners with KDE's CTE program consultants to discuss curricula and receive feedback on potential updates, specific to programs that align to each industry. The office also uses workforce data strategically to inform its CTE programming, striving to align CTE programs with employer needs and anticipated workforce demands based on available data. OCTE encourages the expansion of career pathways that are expected to lead to high-demand and high-wage jobs.

Career Readiness Data Practices

To stay on top of career readiness-related data requests and reporting requirements, OCTE has established well-documented processes for its monthly and annual tasks. Within OCTE and across other KDE departments, there is strong collaboration on CCR data, and OCTE ensures that its staff are cross trained in the department's data practices. While OCTE is focused on career-related programs, KDE views postsecondary readiness holistically, and departments work together on CCR data needs. KDE prioritizes high-quality data agencywide, and OCTE supports data quality by providing LEAs with ongoing support, whether a district needs help learning how to enter data, set up new courses, or understand why the data and reporting matter. Each year, OCTE helps plan a statewide summer conference where CTE coordinators from school districts receive training from the department.

KDE posts school report cards online, which increases transparency and reduces the number of data requests the agency must process, since anyone can look up publicly available data. Additionally, KDE often is able to direct data requests to the Kentucky Center for Statistics (KYSTATS),[32] a P-20 data system that has made ample CCR-related data publicly available in online dashboards. KDE works closely with KYSTATS with the goal of helping build the workforce in Kentucky. The two agencies collaborate on dashboards that students, parents, schools, and districts can use, and an employer connector tool links KDE's secondary students pursuing certain career pathways with relevant employers for postgraduation job opportunities. Because KYSTATS collects and links workforce and education data, its reports are helpful for KDE or other CCR data stakeholders for comparing K-12 CCR data with student outcomes in postsecondary education institutions or the workforce. Unlike some states, because of KYSTATS, it is possible in Kentucky to track students' employment and wages after graduation. Kentucky's workforce development cabinet uses KYSTATS data, along with KDE's school report cards, to identify where in the state KDE students are receiving training in specialized areas so that businesses can determine where to identify potential employees.

OCTE also uses data to support program improvement in school districts. The department prepares a postsecondary readiness report for LEAs that reports on academic and career-oriented progress. Schools and districts can use the report's data to reflect on how their students are performing and whether they are achieving postsecondary readiness standards. If they notice issues, such as students who are almost attaining a college or career ready metric but are short by a few credits, they can explore the cause with OCTE's help and address any obstacles.

KDE employs multiple strategies to protect student data privacy. One key strategy is leveraging partnerships with vendors that can offer secure cloud storage. KDE only shares data with data sharing agreements in place, and files are transferred over secure drives, stripped of PII. KDE directs some data requests to KYSTATS, but they have been de-identified and provided with new, unique identification numbers that cannot be traced back to students. Finally, KDE's Office of Education Technology trains other departments on how to follow confidentiality requirements.

Challenges and Best Practices

With the increase in funding to CTE programs, OCTE is receiving more questions from school districts about how to use their funds appropriately. While OCTE is well staffed with program area consultants who are experts in CTE program areas, the department has found that administrative consultants would be a valuable staff addition. Administrative consultants could help LEAs ensure they are meeting all the requirements associated with new CTE funding. OCTE also would like to provide more support to LEAs for using high-quality, research-based indicators of career readiness. Districts are interested in receiving more support in this area.

KDE recommends the following best practices to other SEAs for career readiness strategies.

- **Collaborate:** Consider partnering with other organizations and employers that are interested in investing time and resources into reviewing and analyzing agency data, with privacy

[32] Kentucky Center for Statistics. (n.d.). *Reports*. Retrieved December 19, 2024, from **https://kystats.ky.gov/Reports/Reports**.

protections in place. KDE is working with a partner that is researching how career outcomes for students who completed work-based learning (WBL) compared to students who did not complete WBL. As with many state agencies, KDE leaders acknowledge that while they are experts at collecting data, they have more limited resources available to analyze data. Leveraging partnerships can help the agency learn from the data they have collected and better tell the story of their career readiness work, which can be used to grow the CTE program further.

- **Convey the Purpose:** When working with LEAs, OCTE does not focus only on training staff on how to complete the mechanics of CTE programmatic work or data reporting, but also on how these tasks will benefit students' lives. The department consistently aims to make training relevant and impactful.
- **Embrace P-20 Data Systems:** Kentucky is recognized nationally for its P-20 data system and the comprehensive online data dashboards KYSTATS makes available to the public. Although it is a major undertaking, KDE recommends that more states develop similar structures.
- **Focus on the Students:** KDE leaders encourage other SEAs not to lose sight of the fact that the purpose of collecting, integrating, reporting, and using data is to support students. KDE strives to use data as a tool to benefit students, not as an end goal.

Milwaukee Public Schools (WI): Fostering CCR Partnerships

Innovative CCR Programs

In Wisconsin, Milwaukee Public Schools (MPS) has a dedicated Department of College and Career Readiness that supports the district's graduation and postsecondary preparedness strategic initiative. With a commitment to providing students with holistic support in navigating their chosen career pathways, the department oversees six areas:

- advanced academics programs;
- CTE;
- MPS College and Career Centers;
- extended learning opportunities;
- postsecondary engagement; and
- school counseling.

Whether students plan to pursue college, military enlistment, job training programs, or enter the workforce directly upon high school graduation, MPS has the same CCR goals for all students: graduating on time with strong GPAs, having mastered the content and skills needed to succeed in their chosen paths. With the support of school counselors, every student creates an Academic and Career Plan (ACP), a state requirement that also is codified as an MPS graduation requirement. Additionally, unless a waiver is granted, all MPS students are required to complete the Free Application for Federal Student Aid (FAFSA).

The CCR department's key priorities are to help ensure that students stay on track to graduate on time, and to work with postsecondary institutions to reduce barriers to college admissions. In high school-based MPS College and Career Centers, staff provide students with free postsecondary planning support, including help with completing applications for college, internships, employment, financial aid, and scholarships, as well as coordinating college tours, registering for college readiness assessments, and other services. Postsecondary engagement initiatives include district partnerships with nonprofit organizations and higher education institutions. The department hosts a monthly meeting to bring these partners together, encouraging coordination of their efforts to support the more than 19,000 students attending the district's 40 high schools.

In one successful partnership called the M3 (M-cubed) College Connections Program, the University of Wisconsin-Milwaukee (UWM) and Milwaukee Area Technical College (MATC) collaborate with MPS to support students' transitions into both colleges, provide academic and career planning, and train MPS teachers to prepare students for college success through dual enrollment programs. The newest component of the M3 partnership, Milwaukee Direct Admit, enables MPS students to apply to UWM and MATC in a matter of minutes through a streamlined process that automatically sends their MPS transcripts to these colleges. Additional essays, letters of recommendation, or other files are not required in the application process, and there are no fees. MPS students who graduate from high school in the spring or summer of their senior year are guaranteed admission to at least one of the two participating colleges.

With many nonprofit and postsecondary partners supporting MPS students, the district enters into data sharing memorandums of understanding (MOUs) with each partner, often following extensive planning and coordination efforts. Additionally, after new programs are implemented, addendums to data sharing agreements sometimes are necessary. Nearly all data sharing requires a parent or guardian signature to allow identified student data to be shared between MPS and its programmatic partners.

Using Data to Inform CCR Strategies

The district's robust CCR programs and partnerships generate and rely on CCR data, which can be used to inform program development and improvement, monitor student progress, and evaluate students' CCR. These data provide insights into MPS's strategic initiative to increase the agency's graduation rate over 5 years and increase students' college, career, and citizenship readiness. Accordingly, the MPS CCR department works closely with the district's Research, Assessment, and Data Department. This team also ensures that the agency monitors any CCR requirements for state and federal accountability.

The CCR department's biggest focus is improving the 4-year graduation rate, which fell during the COVID-19 pandemic and has remained a challenge in subsequent years. To identify supports students may need to stay on track for graduation, MPS leaders closely monitor formative data, such as interim, quarterly, and semester grades. At the Principal's Leadership Institute, MPS high school leaders review disaggregated data including course failure data, as a course failure is a risk factor for on-time graduation. The district prioritizes communication with parents and guardians of students, particularly high school seniors, facing a possible failure, with the goal of intervening before students are required to engage in credit recovery.

The Research, Assessment, and Data team analyzes data from the National Student Clearinghouse to understand students' postsecondary enrollment and retention. The district has found that MPS graduates' college retention rates fall substantially after the first or second year of college. These data raise questions about the reasons for the trend and the roles of LEAs, SEAs, and higher education institutions in supporting students' college retention. Through its M3 collaboration with Milwaukee's two largest colleges, MPS has encouraged its partners to expand their focus beyond admissions and prioritize supporting students' success throughout college.

Like many education agencies, the district has found that career data for students who enter the workforce, apprenticeships, or the military after high school are difficult to acquire. While MPS conducts a mandated survey of past students who were CTE concentrators, responses are limited. The district would like to see improvement in the CTE concentrator response rate and hopes that military enlistment data will become more available in the future, both of which would inform CCR programming and strategies.

North Carolina Department of Public Instruction: Building a CCR Culture

Implementing CCR Strategies and Data Practices

When the North Carolina Department of Public Instruction (NC DPI) adopted new state standards in 2010, followed by implementation in the 2012-2013 school year, the state's prior focus on students' academic proficiency shifted to an emphasis on more rigorous expectations of CCR. Navigating this shift required many conversations within the agency about what CCR entailed and how to ensure that CCR goals are inclusive of all students, along with ongoing communication with stakeholders to develop a common understanding of CCR. NC DPI found that consistency and communication were key strategies for integrating CCR efforts successfully into agency culture. By remaining consistent in its language and approach to CCR, whether addressing content standards, academic achievement levels, or data management, CCR strategies and data practices became seamlessly embedded into the work of the SEA over time.

Today, North Carolina's ESSA state plan includes CCR-aligned content standards, tied to standards required by federal law. Academic achievement standards for assessments measuring achievement in science, mathematics, and reading include the following four achievement levels:

- Not proficient
- Level 3: grade level proficient
- Level 4: thorough understanding; meets the standard for CCR
- Level 5: comprehensive understanding; meets the standard for CCR

These achievement levels are incorporated into various NC DPI reports directed to parents, the North Carolina State Board of Education, the U.S. Department of Education (ED), and the general public.

Education data are managed at the state level through a statewide SIS in North Carolina. NC DPI's internal data management group meets to review data requests and processes, while prioritizing the protection of student data privacy. Individual Student Reports notify parents and guardians whether students are progressing as needed to stay on track to become college and career ready. By flagging concerns early, parents and educators can pinpoint where students need additional support to progress toward CCR standards. CCR data included in the state's annual performance report are publicly available online, where users can filter data at the state, district, and school levels. The Career and College Ready section of the North Carolina State Report Card includes the number of students who completed career pathways concentrations or participated in CTE, the number of IRCs students earned, college enrollment rates, and data on ACT, ACT WorkKeys, AP, and IB assessments. In a unique partnership dating to the 1990s, all of the state's testing data, stripped of identifying student information, are provided to Duke University. The university then manages data requests from researchers.

CCR Vision for All Students

NC DPI views college readiness and career readiness as one unified concept rather than two separate paths. The SEA strives to equip all the state's K-12 graduates with the knowledge and skills necessary to be employed in the workforce, enlisted in the military, or enrolled in postsecondary education upon completing high school. In recent years, the agency has expanded its focus on career readiness, with a goal of providing all students with real-world career exploration opportunities, beginning as early as elementary and middle school. Following recent state legislation requiring all North Carolina middle and high school students to complete a Career Development Plan (CDP) annually beginning in the eighth grade, the pilot year for CDPs is underway.

To ensure that North Carolina's CCR strategies and goals are inclusive of all students, the NC DPI Office of Exceptional Children (EC) is a key voice at the table for the state's CCR planning. With the exception of significantly cognitively impaired students, comprising about 5 to 10 percent of the state's EC students, NC DPI expects the remaining 90 to 95 percent of EC students to graduate with their high school diplomas. While the service delivery of EC programs focuses on meeting the unique needs of each student, CCR standards and practices help educators stay focused on maintaining the same level of rigor for EC students as they do for all students. Working closely with other agency departments including academic standards, accountability and testing, and advanced learning and gifted education, the Office of EC has messaged consistently that it is vital to include EC in CCR planning and that the state's CCR strategies are important to the work of the office. EC programs are designed to support students' involvement and participation in school in the least restrictive environment possible, requiring collaboration across departments. NC DPI leaders encourage other SEAs to ensure they are inclusive of all departments and all students in CCR planning and implementation.

Wellsville Unified School District 289 (KS): Using Data to Increase CCR Opportunities

Defining CCR and Success

In Wellsville Unified School District (USD) 289 in Kansas, the district coordinates with the Kansas State Department of Education (KSDE) to collect and report on different aspects of students' CCR and success. At the district level, students who meet at least one of the following five additional criteria, in addition to graduating, are considered college and career ready:

- attaining 12 or more hours of college credit;
- obtaining an IRC;
- achieving a score of 21 or higher on the ACT college readiness assessment;
- receiving an ACT WorkKeys assessment certificate; or
- earning acceptance into the military.

These CCR criteria serve as leading measures to help gauge whether students are on track to succeed after high school, whether they choose to enroll in 2-year or 4-year college programs, enlist in the military, or directly enter the workforce. Career counselors track students' CCR progress, and the district submits student achievement data to KSDE throughout the year. Meanwhile, KSDE collects and reports on lagging measures of students' postsecondary success as defined in the Kansas Can initiative. Kansas Can outcomes are based on students' attainment of higher education degrees or IRCs, or their continued enrollment in postsecondary degree programs, 2 years after graduating from or otherwise leaving high school. Additionally, students with disabilities who meet their district's graduation requirements for diplomas but remain in school to receive specified transitional services also meet the state's criteria for postsecondary success. Building on findings from a Georgetown University study that estimates about 70 percent of all jobs in Kansas will require postsecondary education or training beyond high school by 2031,[33] the state has a target of at least 70 percent of students achieving the Kansas Can postsecondary outcomes. KSDE makes data, including the state's and district's graduation rate, postsecondary success rate, and postsecondary effectiveness rate, publicly available online.

Increasing CCR Opportunities

Increasing students' CCR opportunities has been a district priority in recent years, after undergoing a strategic planning process and hearing from the community about how to best serve students. That process began with a committee of 40 to 50 stakeholders, including parents, business owners, administrators, and others. They were assigned to seven teams, each of which had a board member, parent, student, staff, and other community members, and the teams defined what they thought success in the district would look like. The outcomes from this process, which emphasized removing hurdles to CCR opportunities, correlated with similar emerging priorities at the state level. Planning began in the 2018-2019 school year, with a strategic plan developed in 2019 and

[33] Georgetown University, McCourt School of Public Policy, Center on Education and the Workforce. (2023). *After Everything: Projections of Jobs, Education, and Training Requirements Through 2031.* Retrieved December 19, 2024, from **https://cew.georgetown.edu/wp-content/uploads/Projections_2031-State-Report.pdf**.

updated 5 years later. Having representatives from different stakeholder groups helped community members feel their voices were heard.

Under state legislation, the state of Kansas pays for tuition for dual enrollment programs, but students still may have other fees and expenses for college and workforce preparation opportunities.

Wellsville USD 289 students create an individual plan of study that begins with completing a survey of their interests and skills that is used to match them with potential career paths. They then can pursue relevant opportunities such as job shadowing, visiting postsecondary institutions, and attending job fairs to learn more about these career paths. Some students even receive IRCs while still in high school, which can enable them to secure higher-paying part-time jobs by the time they begin attending college. District leaders want all students to prepare for and develop the academic abilities needed to succeed in 4-year university programs, even if that is a path they pursue later in life. However, before the district began supporting the career readiness aspects of CCR more intentionally, students who were not on a college-going path were more likely to drop out of school. The district's commitment to removing hurdles and helping juniors and seniors access career training opportunities has increased their retention and engagement substantially. The school district takes a flexible and motivated approach to connecting students with opportunities that will support their long-terms goals. For example, the district may accommodate student schedules that include educational opportunities outside regular school hours, such as evening classes at a local community college. The district also connects students and families with other supports, such as mental health-related services, viewing these supports as part of the holistic approach necessary to prepare for success after high school.

Impactful Uses of CCR Data

The school district uses the CCR data it collects to help inform and improve opportunities for students. Leading and lagging CCR data are used to evaluate the courses the district is offering, to ensure the district is staffing areas that have the greatest impact on students' goals, and to determine when to partner with other institutions to broaden course and training offerings. As a small school district, Wellsville USD 289 cannot offer all the courses and programs in which students may be interested, so the district collaborates with other institutions and provides students with transportation to off-site opportunities. Removing transportation barriers to participating in CCR-related off-campus opportunities is one of the most meaningful ways that the district has found it can improve CCR opportunities for all students. An advantage of the district's small size is the individualized support students receive. For example, when one student expressed interest in becoming a drone pilot, district staff helped the student find and enroll in a nearby program. District leaders note that this level of individualized support is possible in any sized school district but may require different levels of staffing and systemic approaches.

Wellsville USD 289 also uses CCR data to sustain community support for the education foundation. Each summer after graduation, district leaders give a summary report about the senior class's accomplishments. In particular, this presentation includes the combined total of postsecondary credits the seniors have earned while still in high school and estimates how much those credits would have cost at a 2-year college, emphasizing the significant financial savings to families when students can access college and career opportunities at the K-12 level.

Throughout the past 5 years, the district has demonstrated the importance of engaging the community in planning and goal setting, and in communicating CCR data to community members to provide information about outcomes and ongoing goals. Wellsville USD 289 has increased opportunities for college and career exploration, created new pathways for students interested in embarking directly on career paths after high school, and embraced a holistic view of student success.

Appendix A. Sample State and Local Education Agency (SEA and LEA) College and Career Readiness (CCR) Definitions

Members of the National Forum on Education Statistics (Forum) provided these definitions in March 2024. Some agencies provided definitions for equivalent or similar concepts to CCR, including postsecondary readiness, college and/or career preparedness, and college, career, and military readiness.

State	Agency	College and Career Readiness Definition
Delaware	Brandywine School District	College and/or Career Preparedness (CCP) experiences prepare students for success beyond high school. These experiences include opportunities to earn an industry-recognized credential (IRC), earn college credit, and engage in meaningful work-based learning experiences. Students that demonstrate success in these areas have an increased likelihood of entry and success in pursuing postsecondary education and a career after high school. CCP is the percent of students who have demonstrated readiness for postsecondary education and a career after high school through success in one or more of the identified CCP indicators. CCP indicators are categorized further as "college" metrics (includes successful attainment of Advanced Placement (AP), International Baccalaureate (IB), SAT Essay, and/or dual enrollment) and "career" metrics (includes successful attainment of a state-approved industry credential, dual enrollment, co-op education program or work-based learning experience, certificate of multiliteracy, and/or Armed Services Vocational Aptitude Battery (ASVAB). The designation of "college" and "career" metrics is used for the calculation of this measure for the purpose of assigning bonus points for students who demonstrate successful attainment of both "college" and "career" metrics.

State	Agency	College and Career Readiness Definition
Hawai'i	Hawai'i Department of Education	Hawai'i has adopted the following definition of "college, career and community readiness," developed by the Hawai'i P-20 Partnerships for Education: "Students, who are prepared for meaningful engagement in college, career, and community, have successfully: • Achieved proficiency in essential content knowledge; • Mastered key learning skills and cognitive strategies; • Acquired practical knowledge enabling successful transitions from high school to college and career; and • Built a strong foundation of identity through an ongoing process of wayfinding to engage in local, national, and global contexts. By 'students,' we mean youth enrolled in Hawai'i's public education system recognizing that college, career and community readiness is a lifelong process that begins with early childhood learning. By 'college,' we mean two- and four-year post-secondary institutions, trade schools, and technical schools. By 'career,' we mean a pathway of employment that provides a family-sustaining wage. By 'community,' we mean the set of interdependent relationships among physical, social and/or cultural groups linked by a shared responsibility for one another, the natural world, and local and global well-being. Students have the content knowledge and skills to be eligible to enroll in credit-bearing, postsecondary courses, workforce training and/or apprenticeship programs without the need for remediation, and complete them successfully. Students are able to navigate through postsecondary program selection and admissions, possess the knowledge and skills to enter into and thrive in a family-sustaining career pathway, and utilize strategies to resolve problems and improve academic performance. Wayfinding: Students are able to identify their kuleana and work hard to fulfill these responsibilities to their families, 'āina, community, and future and past generations. Students know what makes their communities unique and become more involved through opportunities such as volunteer service, ecological stewardship, and civic engagement. Students understand and can comfortably interface with diverse perspectives, cultures, and worldviews to flourish in and sustain local and global communities."
Illinois	Illinois State Board of Education	This is defined as the percentage of students who are considered to be Distinguished Scholars or College and Career Scholars under the criteria outlined in the College and Career Readiness Indicator Guidance. General readiness indicators include GPA, 95% attendance junior and senior years, identifying a career area of interest by the end of sophomore year, and the college and career pathway endorsement. Numerous additional academic and career ready indicators are also outlined.

State	Agency	College and Career Readiness Definition
Iowa	Green Hills Area Education Agency	Goal #3: Through collaboration with local education agencies (LEAs) and in partnership with students, families, businesses, community agencies, and the Iowa Department of Education, Green Hills Area Education Agency will ensure every student graduates from high school "Future Ready."
Kansas	USD 204-Bonner Springs/Edwardsville Unified School District	College and career readiness (CCR) refers to the preparedness of students to successfully navigate and succeed in post-secondary education and/or enter the workforce. Students leaving our high school are prepared to be a college degree seeking student, a certificate/job training bound student, or a work force/military bound student. We work to develop learners, prepare citizens, and pursue excellence.
Kentucky	Kentucky Department of Education	In Kentucky, the term for CCR is Postsecondary Readiness. Postsecondary Readiness is the attainment of the necessary knowledge, skills, and dispositions for a student to successfully transition to the next level of his or her educational career.
Louisiana	Louisiana Department of Education	College and career ready means that individuals graduate from high school prepared for university, community college, or technical college programming without need for remediation or corequisite support and/or graduate prepared for employment with the foundational skills required for entry into career pathways, possessing both rigorous content knowledge and the ability to apply that knowledge. Graduates possess a baseline of the core competencies tied to life and career success in the 21st century–effective communication and collaboration, critical and creative problem solving, adaptable resilience, cultural competence, and self-reflective awareness–and are poised for further development based on individual plans and goals through higher education or career training. This definition is aspirational. It is incumbent upon the components of Louisiana's education enterprise in policy and practice to meet students where they are and facilitate the development of individuals to their fullest potential.
Montana	Montana Office of Public Instruction	CCR refers to 12th-grade students having the skills, knowledge, and abilities needed to succeed in life after high school, whether that's college and/or career. This measure is based on benchmarks of success that include academic and content knowledge, cognitive and higher-order thinking strategies, and critical thinking and problem solving. A measure of college and/or career readiness is used for identifying high schools for support, which uses a combination of academic measures (based on proficiency and college readiness on the ACT statewide administration) and coursework measures (by including a percentage of senior students who are career & technical education (CTE) concentrators).

State	Agency	College and Career Readiness Definition
Texas	Texas Education Agency	The College, Career, and Military Readiness (CCMR) component of the Student Achievement domain measures graduates' preparedness for college, the workforce, or the military. Graduates are considered college, career, or military ready if they meet any of the criteria below: • Meet Texas Success Initiative (TSI) Criteria in RLA and Mathematics • Dual Course Credits • Meet Criteria on Advanced Placement (AP)/International Baccalaureate (IB) Examination • Earn an Associate Degree • Complete an OnRamps Dual Enrollment Course • Earn an Industry-Based Certification (IBC) • Graduate with Completed Individualized Education Program (IEP) and Workforce Readiness • Graduate Under an Advanced Diploma Plan and be Identified as a Current Special Education Student • Earn a Level I or Level II Certificate • Enlist in the Armed Forces or Texas National Guard
Virginia	Virginia Department of Education	The Virginia College and Career Readiness Initiative builds on the revised standards and is designed to: (1) ensure that college and career ready learning standards in reading, writing, and mathematics are taught in every Virginia high school classroom; and (2) strengthen students' preparation for college and the work force before leaving high school.
Washington	Office of Superintendent of Public Instruction (OSPI)	The Washington Office of the Superintendent of Public Instruction has adopted the following definition of college and career readiness and included it in its ESEA flexibility request: "The purpose of the diploma is to declare that a student is ready for success in postsecondary education, gainful employment, and citizenship, and is equipped with the skills to be a lifelong learner. The diploma represents a balance between the personalized education needs of each student and society's needs, and reflects, at its core, the state's basic education goals."
West Virginia	Putnam County Schools	Our college and career readiness is defined by state policy. The West Virginia College- and Career-readiness Programs of Study/Content Skillsets (CSS) provide a focus for teachers to teach and students to learn those skills and competencies essential for future success in the workplace and further education. College- and career-readiness refers to the knowledge, skills, and dispositions needed to be successful in obtaining an entry-level job and continued training in a specific craft and/or higher education that all lead to gainful employment.

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Related Resources

National Forum on Education Statistics Resources

Using Education Indicators: A Forum Guide for State and Local Education Agencies (2022)

https://nces.ed.gov/forum/pub_2022132.asp

This resource was developed to provide timely and useful information on education indicators, how their collection and use have changed over time, and how agencies use them strategically. This resource highlights best practices for using indicators, adjustments over time to the collection and use of indicators, shifts in types of relevant indicators, and what possibilities state and local education agencies (SEAs and LEAs) see for the effective use of indicators in the future.

Forum Guide to Strategies for Education Data Collection and Reporting (SEDCAR) (2021)

https://nces.ed.gov/forum/pub_2021013.asp

This resource was created to provide timely and useful best practices for education agencies that are interested in designing and implementing a strategy for data collection and reporting, focusing on these as key elements of the larger data process. This new resource is designed to be relevant to the SEAs and LEAs of today, in which data are regularly collected for multiple purposes, and data collection and recording may be conducted by many different individuals within an agency.

School Courses for the Exchange of Data (SCED) Uses and Benefits (2021)

https://nces.ed.gov/forum/pub_2021023.asp

This resource was developed to provide a brief overview of SCED, highlight the research application and benefits of SCED to users, and illustrate SCED uses with case studies. SCED is a voluntary, common classification system for prior-to-secondary and secondary school courses.

Forum Guide to Cybersecurity: Safeguarding Your Data (2020)

https://nces.ed.gov/forum/pub_2020137.asp

This resource provides timely and useful best practice information to help education agencies proactively prepare for, appropriately mitigate, and responsibly recover from a cybersecurity incident. It provides recommendations to help protect agency systems and data before, during, and after a cybersecurity incident and features case studies from SEAs and LEAs.

Forum Guide to Data Governance (2020)

https://nces.ed.gov/forum/pub_2020083.asp

This resource provides timely and useful best practices, examples, and resources for agencies implementing or updating their data governance programs. It provides an overview of data governance; discusses effective data governance practices, structures, and essential elements; describes how to meet privacy and security requirements; and includes detailed case studies from education agencies in their data governance efforts.

Forum Guide to Personalized Learning Data (2019)

https://nces.ed.gov/forum/pub_2019160.asp

This resource will help education agencies as they consider whether and how to expand their use of personalized learning. It includes an overview of the topic, best practices on collecting and using data for personalized learning, and case studies from states and districts that have implemented personalized learning.

Forum Guide to Early Warning Systems (2018)

https://nces.ed.gov/forum/pub_2019035.asp

This resource provides information and best practices that will help education agencies plan, develop, implement, and use an early warning system in their agency to inform interventions that improve student outcomes. This document focuses on early warning systems and their data from the perspective of the education data community.

Forum Guide to Collecting and Using Attendance Data (2018)

https://nces.ed.gov/forum/pub_2017007.asp

This resource offers best practice suggestions and features real-life examples of how attendance data have been used by education agencies. A set of voluntary attendance codes that can be used to compare attendance data across states, districts, and schools is included, as well as tip sheets for a wide range of education agency staff who work with attendance data.

Forum Guide to Collecting and Using Disaggregated Data on Racial/Ethnic Subgroups (2016)

https://nces.ed.gov/forum/pub_2017017.asp

This resource is intended to identify some of the overarching benefits and challenges involved in data disaggregation, recommend appropriate practices for disaggregating racial/ethnic data in states and districts, and describe real-world examples of large and small education agencies disaggregating racial/ethnic data successfully.

Forum Guide to Education Data Privacy (2016)

https://nces.ed.gov/forum/pub_2016096.asp

This resource provides SEAs and LEAs with best practice information to use in assisting school staff in protecting the confidentiality of student data in instructional and administrative practices. SEAs and LEAs may also find the guide useful in developing privacy programs and related professional development programs.

Forum Guide to College and Career Ready Data (2015)

https://nces.ed.gov/forum/pub_2015157.asp

This resource outlines the data needs and helpful analytics for five use cases (individual learning plans, educator support systems, postsecondary feedback loops, accountability systems, and career technical and education programs) that support SEA and LEA college and career-ready initiatives.

Additional Resources

Data Governance Checklist

https://studentprivacy.ed.gov/resources/checklist-data-governance

This checklist is designed to assist stakeholder organizations with establishing and maintaining a successful data governance program by summarizing the key data privacy and security components of such a program and listing specific best practice action items.

National Center on Education Research (NCER)

Common Challenges to Implementing College- and Career-Readiness Standards (2019)

https://eric.ed.gov/?q=%22Center+on+Standards%2c+Alignment%2c+Instruction%2c+and+Learning%22&id=ED598946

While many in the field of teaching grapple with the revisions that come with a growing decentralization of standards-based reform, teacher learning and understanding of college and career readiness (CCR) standards and revisions is critical to successful implementation. Even when fully supported and focused on implementing standards in the classroom, teachers often face challenging work conditions that stymie their best efforts to implement standards-based reform. This brief report describes the top five reported challenges among teachers.

Evaluation of a Predictive Model – Montana's Early Warning System for Dropouts (2021)

https://ies.ed.gov/funding/grantsearch/details.asp?ID=4531

In this project, Montana's Office of Public Instruction (OPI) and Montana State University will examined Montana's Early Warning System (EWS) to predict student dropout risk and risk factors for students in grades 3-12. Researchers with the Montana OPI developed objective, evidence-based indicators that respond to student context. These indicators show when a student may be at risk and provide signs of when to intervene.

Successes and Challenges of the "New" College- and Career-Ready Standards: Seven Implementation Trends (2019)

https://eric.ed.gov/?id=ED595719

This study identifies seven major trends in how states and districts are implementing college- and career-ready standards for general education students and for two special populations often the target of education policy--English language learners (ELLs) and students with disabilities (SWDs).

Creative district approaches and moderate to high levels of authority hold promise for this wave of college- and career-ready standards.

Adding It Up: How the Florida College and Career Readiness Initiative (FCCRI) Impacted Developmental Education (2018)

https://eric.ed.gov/?id=EJ1178836

The FCCRI was a statewide policy requiring college readiness testing and participation in college readiness courses for high school students. This study used regression discontinuity to compare outcomes for students scoring just above and below test score cutoffs for assignment to FCCRI. It also examined impacts for students from a wider range of academic performance by using a before-after regression analysis to compare outcomes for targeted students before and after their schools implemented the FCCRI.

Office of Career, Technical, and Adult Education (OCTAE)

Perkins Collaborative Resource Network: Perkins State Plans and Data Explorer

https://cte.ed.gov/pcrn/explorer

The Perkins State Plans and Data Explorer is designed to provide career and technical education (CTE) practitioners, researchers, and stakeholders, with ready access to information and data submitted by States in their Perkins V State Plans, covering fiscal years (FY) 2020-2023, and Consolidated Annual Reports (CARs), pursuant to the Strengthening Career and Technical Education Act (Perkins V) and its predecessor Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV). This information and data can help interested parties understand each state's vision, goals, and priorities for CTE, as well as explore the outcomes for students who concentrate in CTE programs.

Regional Education Laboratories (RELs)

REL Program

https://ies.ed.gov/ncee/edlabs/

The 10 RELs work in partnership with school districts, state departments of education, and other educational stakeholders to use data and research to improve academic outcomes for students. The RELs bring together people with disparate areas of expertise and interest to provide technical support, conduct research, and offer learning opportunities that inform changes to policy and practice in an effort to improve educational outcomes for students.

Alternative Career Readiness Measures for Small and Rural Districts in Texas (2021)

https://ies.ed.gov/ncee/rel/Products/Region/southwest/Publication/90138

Texas House Bill 3, passed in 2019, established a college, career, and military readiness (CCMR) outcomes bonus, which provides extra funding to districts for each annual graduate demonstrating CCMR under the state accountability system. Some small district and rural district leaders expressed concern about the ability of their graduates to meet the career readiness component of the CCMR accountability standards due to a lack of CTE program or course resources. In response to a request from the Texas Education Agency (TEA), this study examined whether graduates from small districts and rural districts who did not demonstrate CCMR demonstrated career readiness via five possible alternative career readiness options identified by TEA.

College and Career Readiness Research Alliance (CCR RA)

https://ies.ed.gov/ncee/edlabs/regions/central/partnerships/ccrra.asp

The CCR RA is a cross-state group of researchers, policymakers, and practitioners who share a common goal of ensuring that all students graduate from high school prepared to enter the workforce or enroll in postsecondary degree or certification programs. To meet this goal, the alliance has two areas of focus: Postsecondary Success and Algebra I Readiness and Success. Specifically, the CCR RA aims to increase the capacity of educators in participating states to gather and use data to promote the postsecondary success of their students.

Do College and Career Readiness and Early College Success in Indiana Vary Depending on Whether Students Attend Public, Charter, or Private Voucher High Schools? (2021)

https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=REL2021071

This study identified the type of high school enrollment among students enrolled in ninth grade in 2010/11-2013/14 and examined their performance on indicators of college and career readiness and early college success.

Identifying Indicators that Predict Postsecondary Readiness and Success in Arkansas (2021)

https://ies.ed.gov/ncee/rel/Products/Region/southwest/Publication/5151

Arkansas has identified CCR indicators for schools that can be used to monitor students' performance and to improve their postsecondary readiness and success. Using two cohorts of sixth-grade students, this study examined the extent to which Arkansas's middle school and high school indicators of postsecondary readiness predict a student postsecondary readiness outcome (an ACT score of 19 or higher) and success outcomes (enrolled in college for at least one term within 8 years of beginning sixth grade and persisted in college by enrolling for more than one term within 8 years of beginning sixth grade).

Measuring Civic Readiness: A Review of Survey Scales (2021)

https://ies.ed.gov/ncee/rel/Products/Region/central/Publication/5159

This resource supports state and local education agencies in identifying, comparing, and contrasting survey scales that measure a variety of civic readiness categories. It describes the format and structure of survey scales, details the civic readiness categories measured by the scales, and summarizes the reliability and validity evidence associated with the scales.

Steps to Develop a Model to Estimate School- and District-Level Postsecondary Success (2021)

https://ies.ed.gov/use-work/resource-library/resource/video/steps-develop-model-estimate-school-and-district-level-postsecondary-success

This tool is intended to support SEAs and LEAs in developing a statistical model for estimating student postsecondary success at the school or district level. The resulting model generates an indicator of a school's or district's contribution to the postsecondary success of its students after contextual factors are accounted for that might be outside a school's or district's control, such as student demographic characteristics and community characteristics. SEAs and LEAs could use the information generated by the models they develop to help meet federal and state reporting requirements and to inform their own efforts to improve their students' postsecondary success.

The Impact of Career and Technical Education on Postsecondary Outcomes in Nebraska and South Dakota (2021)

https://ies.ed.gov/ncee/rel/Products/Region/central/Publication/5191

Education leaders in Nebraska and South Dakota partnered with REL Central to examine how completing a sequence of CTE courses in high school affects students' rates of on-time high school graduation and their rates of postsecondary education enrollment and completion within 2 and 5 years.

Understanding College and Career Readiness in the Northern Mariana Islands (2018)

https://ies.ed.gov/ncee/rel/Products/Region/pacific/Resource/70120

This infographic explores what high school and college data reveal about the college readiness of public high school graduates in the Northern Mariana Islands. It suggests that fewer college students graduated when placed in developmental English and math courses than students placed in credit-bearing courses in either subject.

Career & Technical Education Research Network (CTERN)

CTE National Datasets Catalog (2020)

https://cteresearchnetwork.org/resources/cte-national-datasets-catalog

The CTE Research Network developed this catalog to help researchers identify datasets that can be used for CTE research. The catalog represents a sampling of datasets from the National Center for Education Statistics (NCES) and is not intended to be an exhaustive survey of available data.

Identification and Counterfactuals for Program Evaluation of Career and Technical Education (2020)

https://cteresearchnetwork.org/resources/cte-evaluation-counterfactuals

Evaluating CTE programs requires identifying a control group of students, or counterfactual. This paper from the CTE Research Network's Definitions and Measures Workgroup presents a series of case studies assessing the counterfactual for a selection of experimental and quasi-experimental CTE program evaluations.

Improving Measurement in Career and Technical Education to Support Rigorous Research (2020)

https://cteresearchnetwork.org/resources/improving-measurement-cte

Systematic measures are needed to fully capture the impact of CTE. This paper from the CTE Research Network's Definitions and Measures Workgroup catalogs the measures of CTE exposure that prior studies have used, documents measures and outcomes in more recent causal studies, and offers a framework for how to measure CTE exposure and outcomes in the future.

Harnessing State Longitudinal Data Systems to Assess Career and Technical Education Outcomes (2019)

https://cteresearchnetwork.org/resources/harnessing-state-longitudinal-data-systems-assess-career-and-technical-education-outcomes

Statewide longitudinal data systems (SLDS) contain individual record-level data on public school students that can be used to assess their progress and outcomes in and across education levels. This paper from Education Northwest examines the potential role that SLDS can play in providing a more complete picture of education and workforce development for CTE researchers and stakeholders.

Bureau of Labor Statistics

Occupational Outlook Handbook (OOH)

https://www.bls.gov/ooh/home.htm

The OOH is a career resource offering information on the hundreds of occupations that provide most of the jobs in the United States. Each occupational profile describes the typical duties performed by the occupation, the work environment of that occupation, the typical education and training needed to enter the occupation, the median pay for workers in the occupation, and the job outlook over the coming decade for that occupation.

SEA Resources

North Dakota Choice Ready

https://www.nd.gov/dpi/districtsschools/essa/accountability-support-improvement/choice-ready

Choice Ready is a new component in the North Dakota Accountability system to measure whether high schools are producing students who are ready for success upon graduation. The metrics outlined within the Choice Ready initiative are intended to measure growth for North Dakota high schools, as indicated by student readiness upon high school graduation. This framework supports the department's mission: All students will graduate choice ready with the knowledge, skills, and disposition to be successful.

Organizational Resources

Council of Chief State School Officers (CCSSO) Opportunities and Options: Making Career Preparation Work for Students (2023)

https://edstrategy.org/wp-content/uploads/2017/09/CCSSOTaskForceCareerReadiness120114.pdf

CCSSO's Career Readiness Initiative is rooted in the work of CCSSO's Career Readiness Task Force. The Initiative includes ongoing career readiness support to all states, and targeted technical assistance to a network of states committed to being early adopters of the task force recommendations.

Organization for Economic Co-operation (OECD) Career Readiness Review: The Commonwealth of Virginia, United States (2023)

https://www.oecd.org/publications/career-readiness-review-the-commonwealth-of-virginia-united-states-a5ff0e6c-en.htm

Collecting data from current secondary school students and young adults in the labor market, this report provides an overview of career development in Virginia and explores the extent to which students are being effectively, efficiently, and equitably prepared for their working lives through career guidance programs. The report highlights international practice that can be expected to reduce inequalities in provision, linked especially to the socioeconomic backgrounds of students and their geographic location.

U.S. Chamber of Commerce Foundation: Introducing the LER Hub – The Next Phase in the Development of Learning and Employment Records (2020)

https://www.uschamberfoundation.org/workforce/introducing-ler-hub-next-phase-development-learning-and-employment-records

The Center for Education and Workforce's T3 Innovation Network™ launched a new resource hub to support the development of learning and employment records (LERs). LERs are digital records that will document learning wherever it occurs, including at the workplace, through an education program/experience, or through military training.