

Title: Indicators of college- and work- readiness (and early indicators of dropout)

Date: May 2010

Question: Could you provide research and information on how best to support students in being college- and career-ready and indicators for college and career readiness? Additionally, has anyone identified readiness indicators earlier than high school?

Response:

We searched for information relevant to preparing students to be career- and college-ready, and have grouped them below into two categories: references and organizations (with abstracts/excerpts provided by the author or organization). Though much of the work that has been done to develop standards against which students may be tracked and assessed has been done at the state and national levels, a sample of that information is included here as context for efforts at the district level. In addition to the current focus on college readiness, there is also more attention being paid to preparing students to achieve at grade level and graduating from high school, both logical prerequisites to being successful in college and work. Therefore, we also include information here about “early warning” systems and indicators to identify those students at risk of dropping out of school.

Interest in college readiness indicator systems stems primarily from concerns that approximately one half of entering postsecondary students do not meet placement standards and are not ready for college-level work (Kirst and Venezia 2006). This gap between what high schools require for graduation and what colleges and universities require for college-level courses has left many students inadequately prepared for postsecondary study. As a result, too often students fail placement tests and require extensive college-level remediation, therefore increasing the time and money spent toward earning a degree, and often reducing those students’ chances of college completion. In addition, the changing economic and global landscape demands a workforce with ever-increasing skills and education.

As underprepared as many students are upon entrance to a postsecondary institution, many more do not even graduate high school. Approximately 1 million American students drop out of school per year. About one third of students do not graduate on time with their classmates (National High School Center 2007, see http://www.betterhighschools.com/docs/NHSC_DropoutFactSheet.pdf). Although there are efforts to reengage those students, there is also substantial work being done to prevent students from dropping out in the first place, and a growing body of work developing

indicators, or “early warning systems,” that point to a child’s increased likelihood to count among this population of at-risk students (Celio and Leveen 2007; Heppen and Therriault 2008; Pinkus 2008).

While most of the literature on indicators of college readiness, as well as high school completion, focuses on data at the high school level (particularly the ninth grade year), there is some research and action being taken at the middle school level (Balfanz 2009). Although in our initial search we have not found early childhood- or elementary-level indicators of high school completion or college readiness, the case can be made that preparation proceeds along a continuum from birth to college, and that care should be taken to ensure children enter kindergarten ready for learning and school since achievement gaps tend to persist or grow from those early years (Rhode Island KIDS COUNT 2005).

Early Predictors of High School Graduation

Recent research in large urban school districts, including Baltimore, Boston, Chicago, Philadelphia, and Portland has identified meaningful indicators that can predict early on whether students will complete high school. These indicators are course performance, attendance, academic skills, and unsatisfactory behavior.

Balfanz (2007, 2009) has found powerful sixth grade predictors of students’ likelihood of graduating high school, particularly for students growing up in high-poverty environments. These “off-track” indicators include failing math or English/reading, an attendance rate of less than 80 percent, or receiving an unsatisfactory behavior grade in a core course. Specifically, sixth graders with one or more risk factors have only a 10 percent chance of graduating on time, and a 20 percent chance of graduating one year late. First conducted in Philadelphia, this study was replicated in five other districts and found that across districts, most middle school students developed their off-track indicators in sixth grade. In addition, the earlier students developed off-track indicators (in sixth grade versus seventh grade), the lower their odds were of graduating high school. Conversely, across the districts examined, middle grades students who had 95 percent or better attendance, B averages or better, and no record of misbehavior graduated in relatively large numbers, even when they attended low-performing schools in high-poverty districts. Similar schools serving similar student populations had different percentages of students with off- and on-track indicators, indicating that schools can have a powerful influence on shaping student behavior.

In Chicago, the focus is on ninth grade indicators. Allensworth and Easton (2007) found students’ course performance (measured by number of Fs, course credits earned, and freshman grade point average) and attendance (measured by number of absences) during their first year of high school to predict up to 80 percent of the likelihood they would graduate from high school. These indicators were better predictors of graduation than students’ middle school achievement test scores or background characteristics. Ninth grade seems to be a crucial turning point for many students (Heppen and Therriault 2008). For example, Chicago students who scored in the highest quartile on the eighth-grade achievement test but fell off track their freshman year of high school were far less likely to

graduate than students who scored in the lowest quartile in eighth grade but were on track by the end of freshman year (Allensworth and Easton 2007).

Additional research on early indicators of dropping out confirms that students' course success, attendance, and academic skills are strong predictors of eventual graduation (Pinkus 2008). Drawing on research conducted by the National Center for Educational Achievement (NCEA), Dougherty (2010) examines the relationship between students' academic preparation level in eighth grade and their likelihood of meeting college and career readiness targets by the end of high school. He finds that a small percentage of students who enter high school with large "academic preparation gaps" (measured in relation to performance targets) leave high school equipped with the knowledge and skills necessary to be successful in college. The evidence indicates that most eighth grade students, and in particular low-income and minority students, are not meeting college and career readiness targets. This suggests there are gaps in their academic preparation as they enter high school. Conley (2007) asserts that middle school courses, particularly in math and English, should be examined carefully for the extent to which they adequately prepare students for high school-level academics. A common theme throughout the literature is the need to develop a comprehensive monitoring system that tracks student progress on various predictive indicators over time, starting in middle school (ACT, Inc. 2006; Balfanz 2007; Conley 2007; Pinkus 2008).

College Readiness

By fostering the skills and knowledge necessary to succeed in high school, middle schools help set the path for students' college and career readiness. College readiness, operationally defined by David Conley (2007), one of the contemporary "thought leaders" in the measurement of college readiness, as "the level of preparation a student needs in order to enroll and succeed—without remediation—in a credit-bearing general education course at a postsecondary institution that offers a baccalaureate degree or transfer to a baccalaureate program," requires a stronger alignment between standards, assessments, policies, and coursework at the high school and postsecondary levels. The growth of local- and state-level P-16/P-20 Councils, including in California, and their work in vertical curriculum alignment is an outgrowth of this recognized need for improved college readiness (see the Education Commission of the States website for information on state-level councils, which have been established in a majority of states: <http://mb2.ecs.org/reports/Report.aspx?id=2051>). In fact, college and career readiness is at the center of the Obama administration's education agenda.

A national leader on this issue has been the American Diploma Project Network (ADP). This coalition of 34 states is dedicated to aligning standards, graduation requirements, assessments, and accountability policies with the demands of postsecondary study and careers. The ADP coalition shares the common goals of alignment of high school standards and assessments, a rigorous curriculum, streamlining of state assessments to also serve as work and college readiness tests, and holding high schools accountable for graduating students ready for careers and college and postsecondary institutions for student success. Each state member of the ADP develops its own plan to achieve these common goals (Achieve, Inc. 2008). Indiana, for example, has developed a rigorous set of courses called

the Core 40 that specifically prepares students for college and careers. The state is working on policies to require all high school students to complete the Core 40 as a diploma requirement and to make completion of these courses a minimum requirement for admission to Indiana's four-year institutions (Achieve, Inc. 2008).

Texas has been working to improve college readiness through the alignment of standards, assessments, policies, and coursework at the high school and postsecondary levels. The state was one of the first in the nation to offer a college-preparatory curriculum as the default curriculum for all students. Its college readiness standards, developed collaboratively by the Texas Education Agency and the Texas Higher Education Coordinating Board, and adopted in 2008, align the high school curriculum with college and workforce expectations. Examples of performance indicators that assess and measure performance expectations at the classroom level are included in the college readiness standards document (Texas Higher Education Coordinating Board 2008).

Using longitudinal student-level data from two states, Arkansas and Texas, NCEA researchers set college- and career-readiness performance targets, or "test scores that indicate a student is on track to be academically prepared for college by the time he or she finishes high school," in two steps. First, at the student level, the researchers linked test scores in an upper grade (11th or 12th grade) to students' college outcomes to establish the targets. Second, they backward-mapped the upper-grade performance targets to lower graders (8th grade). Dougherty (2010) suggests that performance targets can be identified on state tests where student-level longitudinal data are available for at least one grade and information on statistical distributions are available for all of the grades. States can link their state test results to one or more ACT tests which have established benchmarks.

Notably, there are conceptions of college readiness that extend beyond academic preparation. Child Trends' recent report, *A Developmental Perspective on College and Workplace Readiness* (Lippman et al. 2008), identified college readiness competencies in the developmental domains of psychological development (e.g., self-management), social development (e.g., oral communication skills), cognitive development (e.g., high-level math courses), and spiritual development.

This broader conception of college readiness is aligned with work by Conley (2007), who proposes the general categories of cognitive strategies, academic knowledge and skills, academic behaviors, and contextual skills and awareness as part of his college readiness conceptual framework. Notably, Conley's academic behaviors category includes self-awareness, self-monitoring, and self-control, behaviors that align to some degree with Child Trends' psychological development domain. His category of contextual skills and awareness include behaviors such as collaboration and communication, suggesting an alignment with Child Trends' social development domain.

Assessment of College Readiness

Assessment of college readiness has been a matter of growing concern for the past decade. There also has been growing interest in using college performance, including enrollment in remedial courses, as a post-hoc indicator of college readiness (see Strong American Schools 2008).

Historically, admissions departments of colleges and universities have used as measures of college readiness, student performance on standardized college entrance exams, especially the SAT and the ACT. Other measures commonly used by colleges and universities include student performance on Advanced Placement examinations, high school GPA, and high school course-taking patterns, including the titles, perceived challenge level, and the number of units required for graduation (Greene and Forster 2003; Conley 2007). Of note, ACT offered its own indicator system for college readiness by establishing College Readiness Benchmarks representing the minimum ACT test scores required for students to have a high probability of success in corresponding first-year college courses (ACT 2006; Conley 2007). And the California State University system developed the Early Assessment Program (EAP), which includes augmented testing in 11th grade and the opportunity for additional preparation in the 12th grade so that college-bound high school graduates have the English and mathematics skills expected by the state university (see http://www.calstate.edu/eap/documents/eap_program_description.pdf), without remediation.

There has been growing interest by members of the research community and state policymakers to develop more sophisticated methods of assessing college readiness, including indices and indicator systems based on multiple measures. Berkner and Chavez, in their 1997 statistical analysis report of data drawn from the National Education Longitudinal Study of 1988 (NELS:88), utilized a college qualification index that ranked students by their level of qualification for college study. The index was based on five criteria—grade point average in academic courses, class rank, score on the NELS test (an NCES aptitude test), and SAT and/or ACT scores. Each student was judged based on his or her highest-scoring criterion. In addition to these five criteria, students' rankings were adjusted upwards by one rank if they had taken "rigorous academic coursework," which NCES defined as having taken four years of English; three years each of natural science, social science, and math; and two years of foreign language. Students ranked as "very highly qualified" were moved down a rank if they had not taken such courses (Berkner and Chavez 1997, pp. 21–22, 24).

David Conley (who participated in the development of the Texas College Readiness Standards) argued in his 2007 paper, *Toward a More Comprehensive Conception of College Readiness*, that existing indicators do not adequately assess students' preparation for success in postsecondary study. What he proposes is a comprehensive approach that assesses key cognitive strategies including analysis, interpretation, precision and accuracy, problem solving, and reasoning; specific types of content knowledge; attitudes and behavioral attributes that students who succeed in college must demonstrate, including study skills, time management, awareness of one's performance, persistence, and the ability to utilize study groups; contextual knowledge that a student must possess to be

ready for college, including understanding how to apply to college and how to manage financial aid issues. This comprehensive approach to assessment of college readiness would require multiple measures including collection of evidence to assess key cognitive strategies, a series of end-of-course exams to assess key content knowledge, and questionnaires to gauge student contextual knowledge of the entire process of college admissions, financial aid, and successful functioning in college. Conley suggests that measurement of key academic behaviors, such as study skills and time management, will require the development of a measurement tool that will provide a fine-grained assessment of student competence. He envisioned that the set of scores or indicators across these multiple dimensions could be tracked over time through middle and high school, providing both formative as well as summative data on individual and aggregate college readiness (Conley 2007).

References

ACT, Inc. (2007). *ACT's college readiness standards and college readiness benchmarks: Helping to prepare every student for college and work*. Iowa City, IA: Author.

Available at <http://www.act.org/standard/pdf/CRS.pdf>

Excerpt: ACT's Educational Planning and Assessment System (EPAS) is an integrated series of assessment and career planning programs—EXPLORE (grades 8 and 9), PLAN (grade 10), and the ACT (grades 11 and 12)—designed to help students increase their academic readiness for college. This article provides College Readiness Benchmark Scores on all three programs, including the EXPLORE scores of students in 8th and 9th grades, in the subjects of English, Mathematics, Reading, and Science. These scores are considered early indicators of likely college success.

ACT, Inc. (2006). *Ready for college and ready for work: Same or different?*

Available at <http://www.act.org/research/policymakers/pdf/ReadinessBrief.pdf>

Excerpt: Results of a new ACT study provide empirical evidence that, whether planning to enter college or workforce training programs after graduation, high school students need to be educated to a comparable level of readiness in reading and mathematics. Graduates need this level of readiness if they are to succeed in college-level courses without remediation and to enter workforce training programs ready to learn job-specific skills. [Note: This article looks at ACT scores of eleventh-graders; however, one of the "Action Steps for Policymakers" is: "Begin measuring student progress with aligned assessments as early as the eighth grade to monitor progress, make appropriate interventions, and maximize the number of high school graduates who are ready for college and workforce training programs."]

Adelman, C. (2006). *The toolbox revisited: Paths to degree completion from high school through college*. Washington, DC: U.S. Department of Education.

Available at

http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1b/c0/63.pdf

Abstract: *The Toolbox Revisited* is a data essay that follows a nationally representative cohort of students from high school into postsecondary education,

and asks what aspects of their formal schooling contribute to completing a bachelor's degree by their mid-20s. The universe of students is confined to those who attended a four-year college at any time, thus including students who started out in other types of institutions, particularly community colleges. The core question is not about basic "access" to higher education. It is not about persistence to the second term or the second year following postsecondary entry. It is about completion of academic credentials—the culmination of opportunity, guidance, choice, effort, and commitment.

Allensworth, E., and Easton, J. (2007). *What matters for staying on-track and graduating in Chicago public high schools: A close look at course grades, failures, and attendance in the freshman year*. Chicago, IL: Consortium on Chicago School Research.

Available at <http://ccsr.uchicago.edu/publications/07%20What%20Matters%20Final.pdf>

Abstract: Despite increasing recognition that a high school diploma is a minimum requirement for success in the workplace, nearly half of Chicago Public Schools (CPS) students fail to graduate, and in some CPS high schools, more students drop out than graduate. Research on dropping out has shown that the decision to persist in or leave school is affected by multiple contextual factors interacting in a cumulative way over the life course of a student. Often overlooked in this discussion is one most directly related to graduation: student course performance. This report looks at student performance in freshman coursework, how it is related to eventual graduation, and how personal and school factors contribute to success or failure in freshman-year courses. Data on course performance can be used to identify future dropouts and graduates with precision, and performance indicators are compared to discern how they might be used for nuanced targeting of students at risk of dropping out. Factors contributing to successful course performance demonstrate that what students do while in high school is more important than their background or preparation for high school; significant findings include: 1) course passing rates are found to be primarily determined by attendance; and 2) students attend class more often when they have strong relationships with their teachers, and when they see school and their coursework as relevant and important for their future. This is the message that must be urged upon both students and parents.

Balfanz, R., Herzog, L., and Mac Iver, D. J. (2007). Preventing student disengagement and keeping students on the graduation path in urban middle-grades schools: Early identification and effective interventions. *Educational Psychologist*, 42(4), 223.

Available at

<http://www.every1graduates.org/PDFs/preventing%20student%20disengagement.pdf>

Abstract: This article considers the practical, conceptual, and empirical foundations of an early identification and intervention system for middle-grades schools to combat student disengagement and increase graduation rates in our nation's cities. Many students in urban schools become disengaged at the start of the middle grades, which greatly reduces the odds that they will eventually graduate. We use longitudinal analyses—following almost 13,000 students from 1996 until 2004—to demonstrate how four predictive indicators reflecting poor attendance, misbehavior, and course failures in sixth grade can be used to identify 60 percent of the students who will not graduate from high school. Fortunately, by combining

effective whole-school reforms with attendance, behavioral, and extra-help interventions, graduation rates can be substantially increased.

Balfanz, R. (2009). *Putting middle grades students on the graduation path: A policy and practice brief*. Westerville, OH: National Middle School Association.

Available at http://www.every1graduates.org/PDFs/NMSA_Policy_Brief_Balfanz.pdf

Abstract: This brief is based on more than a decade of research and development work at the Center for the Social Organization of Schools (CSOS) at Johns Hopkins University as well as direct field experience in more than 30 middle schools implementing comprehensive reform and a long-standing collaboration with the Philadelphia Education Fund and several middle schools that serve high-poverty populations in Philadelphia. Our research and fieldwork illuminate key policy and practice implications of the role the middle grades play in achieving our national goal of graduating all students from high school prepared for college, career, and civic life. [Note: The central research question was: How early in the middle grades could we see clear signals that students had fallen off the path to high school graduation? The fundamental finding is that in high-poverty environments a student's middle grades experience strongly impacts the odds of graduating from high school. Sixth graders who failed math or English/reading, or attended school less than 80 percent of the time, or received an unsatisfactory behavior grade in a core course had only a 10 percent to 20 percent chance of graduating on time. Less than one of every four students with at least one off-track indicator graduated within one extra year of on-time graduation.]

Berkner, L., and Chavez, L. (1997). *Access to postsecondary education for the 1992 high school graduates* (Statistical analysis report, NCES 98-105). Washington, DC: U.S.

Department of Education, Office of Educational Research and Improvement.

Available at <http://nces.ed.gov/pubs98/98105.pdf>

Abstract: This report uses data from the National Education Longitudinal Study of 1988 (NELS:88) to examine access to postsecondary education of 1992 high school graduates by 1994, two years after high school graduation. After an overview of the postsecondary enrollment rates of the 1992 high school graduates by family income, race-ethnicity, and parental levels of education, the report focuses on the factors associated with the relatively low four-year college enrollment rates of Hispanic, black, and low-income high school graduates. It examines college costs and financial aid, the educational expectations and immediate college plans of the high school graduates, and their academic preparation as measured by a four-year "college qualification index" developed for this study.

California Legislative Analyst's Office. (2010). *The Master Plan at 50: Greater than the sum of its parts—Coordinating higher education in California* (Testimony of Higher Education Director to the Joint Committee on the Master Plan for Higher Education). Sacramento, CA: Legislative Analyst's Office.

Available at

http://www.lao.ca.gov/reports/2010/edu/ed_coordination/ed_coordination_012810.pdf

Excerpt: Coordination is necessary to guide public higher educational institutions toward collectively meeting state needs. Several states provide valuable examples of

effective coordination leading to improved outcomes for students and states. Drawing on some of these examples, we recommend several legislative actions to improve coordination of higher education in California.

Celio, M. B., and Leveen, L. (2007). *The fourth R: New research shows which academic indicators are the best predictors of high school graduation—and what interventions can help more kids graduate*. Portland, OR: Connected by 25. Available at <http://www.doe.in.gov/alted/pdf/fourth-R.pdf>

Excerpt: This report summarizes the findings of research looking at data for the Portland Public Schools Class of 2004 as it moved through high school to expected graduation in June 2004. The study was undertaken as the basis for determining how to implement support effectively to increase the number of students who graduate from high school. The research focused on learning what indicators best predict which students are at risk for failing to graduate and determining when, by year and quarter, students are most likely to disengage from school.

Closing the graduation gap – A superintendent’s guide for planning multiple pathways to graduation. (2008). MetisNet and the Youth Transition Funders Group. Available at <http://www.ytfg.org/mpgresources/closing-the-graduation-gap-color.pdf>

Excerpt: More than a program, this framework represents a new way of envisioning the path towards graduation. Instead of assuming a linear process proceeding step by step towards graduation, Multiple Pathways to Graduation operates on the assumption that districts must focus on early indicators, offering increased responsiveness, flexibility, and differentiated levels of support to help all students graduate. These districts have found that they can close the graduation gap when they:

- Reframe the dropout conversation to focus on graduation by using language that confronts unhelpful labels and instead refers to “students on- or off-track to graduation, in or out of school” and “transfer schools” designed to help off-track students cross the finish line.
- Analyze the local dynamics of the graduation crisis to determine which factors are both predictive and comprehensive in determining which students will not graduate. Recognizing that students that become off-track to graduation have a low likelihood of completing high school, districts are seeking to develop leading indicators to monitor student progression.
- Increase responsiveness by redesigning school and district operations. By mapping student needs against actionable solutions, districts are increasing graduation rates. First, districts are increasing the number of students that stay on-track to graduation during the transition to high school through prevention and early intervention strategies. Second, they are increasing the likelihood that off-track students graduate through recuperation and recovery efforts.
- Strategically manage a portfolio of schools by developing a set of metrics to maximize student outcomes and plan for the right mix of schools to keep students on track, preparing for college, and able to get back on-track if they begin to slip.

College Board. (2006). *College Board College Readiness Standards for College Success™ English Language Arts*. New York: The College Board. Available at http://www.collegeboard.com/prod_downloads/about/association/academic/english-language-arts_cbscs.pdf

Excerpt: The College Board has developed standards for English language arts to help states, school districts, and schools provide all students with the rigorous education that will prepare them for success in college, opportunity in the workplace, and effective participation in civic life. The College Board's commitment to this project is founded on the belief that all students can meet high expectations for academic performance when they are taught to high standards by qualified teachers. The design of the *College Board Standards for College Success* reflects the specific purposes of a framework to vertically align curriculum, instruction, assessment, and professional development across six levels beginning in middle school leading to AP and college readiness. The *College Board Standards for College Success* is, therefore, more specific than most standards documents because it is intended to provide sufficient guidance for curriculum supervisors and teachers to design instruction and assessments in middle school and high school that lead toward AP and college readiness.

Conley, D. (2003). *Understanding university success: A report from Standards for Success*. Cambridge, MA: Center for Educational Policy Research. Available at http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1b/09/08.pdf

Abstract: This booklet outlines what students must know and be able to do to succeed in entry-level university courses. The standards presented in the booklet were designed to create a new way to view college preparation. The standards—known as the knowledge and skills for university success (KSUS) standards—were developed from a two-year study in which data were collected, and analyzed, from 400 faculty members and administrators from 20 American universities. Success, as defined by these standards, means the ability to do well enough in college entry-level core academic courses to meet general education requirements and to continue on to a major in a particular area. The booklet is divided into six sections, each a content area: English, mathematics, natural sciences, social sciences, second languages, and the arts. Each section describes the knowledge and skills foundations and the standards for entry-level courses and for major courses. Interspersed throughout the booklet are viewpoints of anonymous faculty members on the various skills and knowledge needed for student success in each content area.

Conley, D. (2006). *What we must do to create a system that prepares students for college success*. San Francisco: WestEd.

Available at http://www.wested.org/online_pubs/pp-06-01.pdf

Abstract: An ever-increasing proportion of high school students in the United States aspire to graduate from college. However, far too many of these students are struggling once they enter college. This Policy Perspectives paper helps secondary and postsecondary educators create a more aligned education system that prepares students for college success.

Conley, D. (2007). *Toward a more comprehensive conception of college readiness*. Eugene, OR: Educational Policy Improvement Center.

Available at http://www.collegiatedirections.org/2007_Gates_CollegeReadinessPaper.pdf

Excerpt: The purpose of this paper is to provide an operational definition of college readiness that differs from current representations of this concept primarily in its scope. The paper suggests that, while much has been learned about this phenomenon, particularly during the past 20 years, few systematic attempts have been made to integrate the various aspects or components of college readiness that have been investigated in some depth during this period of time. As a result, college readiness continues to be defined primarily in terms of high school courses taken and grades received along with scores on national tests as its primary metrics.

Diplomas Count 2008: School to college: Can state P-16 councils ease the transition? (2008). Bethesda, MD: Editorial Projects in Education Research Center.

Available at <http://www.edweek.org/ew/toc/2008/06/05/index.html>

Abstract: This year's edition of *Diplomas Count*—a report by *Education Week* and the Editorial Projects in Education Research Center—examines the status of state P-16 councils and whether they can help smooth the road for young people on their way to productive work and citizenship. It also includes graduation rates by U.S. congressional district so that federal lawmakers who craft and monitor such policies can better understand their importance.

Dougherty, C. (2010). *Using the right data to determine if high school interventions are working to prepare students for college and careers*. Washington, DC: American Institutes for Research.

Available at http://www.betterhighschools.org/docs/NCEA_CollegeCareerReadiness.pdf

Abstract: This report is designed to guide educators in collecting and analyzing valuable student achievement data that can help them determine if and how high school interventions for underprepared students are working to effectively prepare them for college and careers. [Note: Section 2 discusses how to disaggregate poorly prepared students based on the size of their academic preparation gaps relative to college and career readiness targets on state and national tests. Section 3 reports on research at the National Center for Educational Achievement (NCEA) on the relationship between students' eighth-grade academic preparation gaps and their likelihood of meeting college and career readiness targets by the end of high school. Section 4 describes the datasets that states and school districts should create to be able to assess the benefits of interventions for students at different prior achievement levels.]

The Education Trust-West. (2010). *San Jose Unified School District: A case study: Preparing students for college and career*. Oakland, CA: Author.

Available at <http://www.edtrust.org/west/publication/san-jose-unified-school-district-a-case-study-preparing-students-for-college-and-ca>

Excerpt: This case study examines the challenges and successes the leaders of San Jose Unified School District faced in navigating uncharted waters toward the destination of college-ready graduates. It became the first district in the state to expect students to complete the University of California and California State

University systems' entrance requirements (commonly called the A-G requirements) to earn a high school diploma.

Finkelstein, N. D., and Fong, A. B. (2008). *Course-taking patterns and preparation for postsecondary education in California's public university systems among minority youth* (Issues & Answers Report, REL 2008–No. 035). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory West.

Available at http://ies.ed.gov/ncee/edlabs/regions/west/pdf/REL_2008035.pdf

Excerpt: This report finds that the high school program for college preparation begins in 9th grade and that making up missed preparatory courses and academic content is likely to be difficult for students who put off college-preparatory work until later in their high school career.

Greene, J. P., and Forster, G. (2003). *Public high school graduation and college readiness rates in the United States*. Education Working Paper 3.

Available at http://www.tedna.org/pubs/ewp_03.pdf

Abstract: Students who fail to graduate high school prepared to attend a four-year college are much less likely to gain full access to our country's economic, political, and social opportunities. In this study we estimate the percentage of students in the public high school class of 2001 who actually possess the minimum qualifications for applying to four-year colleges. To be "college ready" students must pass three crucial hurdles: they must graduate from high school, they must have taken certain courses in high school that colleges require for the acquisition of necessary skills, and they must demonstrate basic literacy skills. Using data from the U.S. Department of Education we are able to estimate the percentage of students who graduate high school as well as the percentage that finish high school ready to attend a four-year college. We are also able to produce these estimates by racial/ethnic group as well as by region and state.

Heppen, J. B., and Therriault, S. B. (2008). *Developing early warning systems to identify potential high school dropouts*. Washington, DC: American Institutes for Research.

Available at http://www.betterhighschools.org/pubs/ews_guide.asp

Abstract: Intended to support educators at all levels of the public school system in building data systems that identify probable high school dropouts before they leave school, this guide discusses the factors that help predict the probability that individual students will eventually drop out of high school and includes step-by-step instructions for building an early warning system.

Jimerson, S., Egeland, B., Sroufe, L., and Carlson, B. (2000). A prospective longitudinal study of high school dropouts examining multiple predictors across development. *Journal of School Psychology, 38*(6), 525–549.

Available for purchase at

http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V6G-423HHYV-3&_user=10&_rdoc=1&_fmt=&_orig=search&_sort=d&_docanchor=&_view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=37d17b33649734d6942badf9a141d7d8

Abstract: Prior studies report a variety of demographic, school, individual, and family characteristics that are related to high school dropouts. This study utilizes data from a 19-year prospective longitudinal study of “at-risk” children to explore multiple predictors of high school dropouts across development. The proposed model of dropping out emphasizes the importance of the early home environment and the quality of early caregiving influencing subsequent development. The results of this study demonstrate the association of the early home environment, the quality of early caregiving, socioeconomic status, IQ, behavior problems, academic achievement, peer relations, and parent involvement with dropping out of high school at age 19. These results are consistent with the view of dropping out as a dynamic developmental process that begins before children enter elementary school. Psychosocial variables prior to school entry predicted dropping out with power equal to later IQ and school achievement test scores. In our efforts to better understand processes influencing dropping out prior to high school graduation, early developmental features warrant further emphasis.

Kemple, J. J. (2001). *Career Academies: Impacts on students' initial transitions to post-secondary education and employment*. New York: Manpower Demonstration Research Corporation.

Available at <http://www.mdrc.org/publications/105/overview.html>

Abstract: In 1993, MDRC began conducting the Career Academies Evaluation, a 10-year longitudinal study of the Academy model in nine schools around the country. In the evaluation, more than 1,700 Academy applicants in the 8th or 9th grade were randomly assigned to enroll in their high school's Academy or to enroll in any other high school program. The differences between the two groups' outcomes serve as estimates of the Academies' effects. Owing to its random assignment design, diverse set of participating students and sites, and long follow-up period—which extends four years beyond the students' scheduled graduation from high school—this study is both more comprehensive and more rigorous than previous studies of Academies and other school reforms. The new impact findings presented in this report are based on survey data collected about one year after scheduled high school graduation. (Also see numerous other reports on career academies on MDRC's website at http://www.mdrc.org/project_publications_29_1.html.)

Kirst, M., and Venezia, A. (2006). *Improving college readiness and success for all students: A joint responsibility between K–12 and postsecondary education*. An issue brief for the Secretary of Education's Commission on the Future of Higher Education.

Available at <http://www.ed.gov/about/bdscomm/list/hiedfuture/reports/kirst-venezia.pdf>

Excerpt: Our research shows that states must create reforms in four key policy areas and connect elementary and secondary education with postsecondary education across them all: curricula and assessment, finance, data collection, and the public reporting of student progress and success. Governance mechanisms must reinforce and sustain those efforts. This report offers recommendations for how state governments can make substantial gains toward closing the longstanding gap within our education system.

Kuh, G., Kinzie, J., Buckley, J. A., Bridges, B., and Hayek, J. (2006). *What matters to student success: A review of the literature*. Commissioned Report for the National Symposium on Postsecondary Student Success: Spearheading a Dialog on Student Success. National Postsecondary Education Cooperative.

Available at http://nces.ed.gov/npec/pdf/Kuh_Team_Report.pdf

Abstract: This report examines the array of social, economic, cultural, and educational factors related to student success in college, broadly defined. After summarizing the major theoretical perspectives on student success, the report synthesizes the research findings related to students' background and pre-college experiences, students' postsecondary activities emphasizing engagement in educationally purposeful activities, postsecondary institution conditions that foster student success, and the desired outcomes of college and post-college as indicators of success. It offers seven propositions about what matters to student success that lead to recommendations to promote student success, and areas where additional research is needed to increase the odds that more students "get ready," "get in," and "get through."

Lippman, L., Atienza, A., Rivers, A., and Keith, J. (2008). *A developmental perspective on college & workplace readiness*. Washington, DC: Child Trends.

Available at http://www.childtrends.org/Files//Child_Trends-2008_09_15_FR_ReadinessReport.pdf

Excerpt: This report provides a developmental perspective on what competencies young people need to be ready for college, the workplace, and the transition to adulthood. National hand-wringing about the lack of preparedness of high school graduates for college and the workplace has catalyzed researchers, educators, and policymakers to define the skills and competencies students need in order to be successful. These prescriptions tend to focus *either* on college readiness *or* on workplace readiness. At the same time but on a separate track, youth development research has identified the assets that youth need in order to make a successful transition to adulthood. Presumably, these three groups of competencies should overlap. Do high school students need the same competencies in order to be ready for college, the workplace, and a healthy transition to adulthood? If so, is there agreement on what competencies are needed? If not, how do the necessary competencies differ across these three areas of life? Are there some competencies which are emphasized for healthy youth development which could be usefully applied to remedy gaps in college and workplace readiness, and vice versa? This report seeks to widen the road to success for high school students. It also provides a sense of the degree to which research in each field indicates a need for each competency. The competencies needed are organized into five domains of youth development: physical, psychological, social, cognitive, and spiritual. A chart of competencies is found on page 32.

Lippman, L., and Whitney, C. (2009). *Research brief: A developmental perspective for high school practitioners on college and workplace readiness*. Washington, DC: Child Trends.

Available at http://www.childtrends.org/Files//Child_Trends-2009_04_28_RB_HighSchoolPrac.pdf

Excerpt: What skills and competencies do high school students need to master for future success? And what can high schools do to develop these skills? Research on

skills has tended to focus either on college readiness or on workplace readiness, often in isolation and frequently without reference to what the broader field of youth development tells us every young person needs to make a successful transition to adulthood. Additionally, the emphasis has been on cognitive skills, and on how students, particularly those with challenges, leave high school intellectually unprepared for college or work. There has been less focus on the specific competencies, including non-cognitive skills, which are necessary to foster that preparation. This brief draws on research across the three fields of college readiness, workplace readiness, and youth development, to identify strategies high schools can employ to foster both cognitive and non-cognitive competencies in their students, and highlights practices that are particularly effective for students facing specific challenges.

Lord, J. M. (2002). *Student readiness for college: Connecting state policies*. Atlanta, GA: The Southern Regional Education Board.

Available at http://publications.sreb.org/2002/02E06_Student_Readiness2002.pdf

Abstract: The first step in developing an effective state-level policy framework is understanding the complexity of student readiness for college. This publication lays out a college-readiness policy framework for states, with particular attention to the needs of students and parents. It looks at many aspects of college readiness—curricula, quality teachers, assessment and accountability, educational support programs, parental involvement, and early information about college for young students.

National Education Goals Panel. (1997). *Getting a good start in school*. Washington, DC: Author.

Available at

http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/14/fc/04.pdf

Abstract: In 1990, the National Education Goals were established by the President and the 50 state governors. Goal 1 states that by the year 2000, all children in America will start school ready to learn. This booklet is a condensed version of an earlier document intended to further amplify the dimensions of early learning and development used by the National Education Goals Panel to measure progress toward Goal 1. Following a list of objectives of Goal 1 and a look at the subjective nature of assessing learning readiness, the booklet briefly discusses the following five dimensions that contribute to school preparedness: 1) health and physical development; 2) emotional well-being and social competence, serving as the foundation for relationships which give meaning to the school experience; 3) approaches to learning, referring to the inclinations, dispositions or styles by which children acquire knowledge; 4) communicative skills, including language, and reading and writing processes; and 5) cognition and general knowledge, the sum of children's early experiences and how they record those experiences. Characteristics of five children considered ready to learn are noted, highlighting the different combination of strengths and weaknesses along the five dimensions. The booklet concludes with a list of publications about or related to readiness, for parents, educators, and policymakers.

Oakes, J., Rogers, J., Silver, D., Valladares, S., Terriquez, V., McDonough, P., Renée, M., and Lipton, M. (2006). *Removing the roadblocks: Fair college opportunities for all California students*. Los Angeles: UC All Campus Consortium on Research for Diversity and the UCLA Institute for Democracy, Education, and Access.

Available at <http://www.law.berkeley.edu/files/Oakes- Rogers- et al - RemovingRoadblocks.pdf>

Excerpt: This report extends UC ACCORD and UCLA IDEA's April 2006 *California Educational Opportunity Report: Roadblocks to College*. That earlier report found that many of the state's high schools provide insufficient college preparatory classes, too few qualified teachers to teach those classes, and too few counselors to guide students along the path to college. Here we look closely at the distribution of these scarce resources. We find that within California's under-resourced education system, resources are not distributed equally: White and Asian students receive considerable college-preparation advantages that African Americans, Latinos, and American Indian students do not.

Pinkus, L. (2008). *Using early-warning data to improve graduation rates: Closing cracks in the education system*. Washington, DC: The Alliance for Excellent Education.

Available at <http://www.all4ed.org/files/EWI.pdf>

Abstract: This brief explores the power of early-warning data in predicting whether a student will drop out, offers examples of current efforts to use such data to guide secondary school interventions across the country, and discusses the policies that can support these efforts. [Note: this report draws from and includes examples of local school systems across the U.S.]

Rhode Island KIDS COUNT. (2005). *Getting ready: Findings from the National School Readiness Initiative (a 17 state partnership)*.

Available at

<http://www.gettingready.org/matriarch/d.asp?PageID=303&PageName2=pdfhold&p=&PageName=Getting+Ready+-+Full+Report.pdf>

Excerpt: The National School Readiness Indicators Initiative: Making Progress for Young Children was a multi-state initiative that developed sets of indicators at the state level to track results for children from birth through age 8. The goal was for states to use the school readiness indicators to inform public policy decisions and track progress in meeting key goals for young children. The attention to tracking state-level outcomes for the youngest children was a unique focus of the Initiative's work. State-level data are not always available from federal statistical data systems and states often do not organize available data to look specifically at the needs of young children and their families. The task of participating states was to develop a comprehensive set of school readiness indicators from birth through third grade. (See <http://www.gettingready.org> for this and related reports.)

Roderick, M., Nagaoka, J., Coca, V., Moeller, E., with Roddie, K., Gilliam, J., and Patton, D. (2008). *From high school to the future: Potholes on the road to college*. Chicago: Consortium on Chicago School Research. Available at

http://ccsr.uchicago.edu/content/publications.php?pub_id=122

Abstract: Since 2004, the Consortium has tracked the postsecondary experiences of successive cohorts of Chicago Public Schools graduates and examined the relationship among high school preparation, support, college choice, and postsecondary outcomes. The goal of this research is to help CPS, other urban districts and national policymakers understand what it takes to improve the college outcomes for urban and other at-risk students who now overwhelmingly aspire to college. CCSR's first report in this series, [*From High School to the Future: A First Look at Chicago Public Schools Graduates' College Enrollment, College Preparation, and Graduation from Four-year Colleges*](#), showed that increasing qualifications is the most important strategy to improving students' college participation, access to four-year and more selective colleges, and ultimately college graduation rates. This second postsecondary report looks beyond qualifications to examine where students encounter potholes on the road to college. Ten case studies included each highlight a student who struggled at a different point in the postsecondary planning process.

Rolfhus, E., Decker, L. E., Brite, J. L., and Gregory, L. (2010). *A systematic comparison of the American Diploma Project English language arts college readiness standards with those of the ACT, College Board, and Standards for Success* (Issues & Answers Report, REL 2010–No. 086). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.

Available at <http://ies.ed.gov/ncee/edlabs>

Excerpt: This study of four national English language arts college readiness standards sets compares content alignment and level of alignment of the standards statements in three comparison sets to a benchmark set, the American Diploma Project (ADP), and analyzes the cognitive complexity of all four sets. Standards statements in the comparison sets align completely or partially to varying proportions of the ADP benchmark's 62 standards statements—77 percent for the College Board College Readiness Standards, 68 percent for Standards for Success, and 34 percent for the ACT College Readiness Standards. But only 5 percent of the ADP statements completely align with content in all three comparison sets, a share that rises to 27 percent when partial alignment is also considered. A majority of statements in the four sets (53–68 percent) were rated level 3 on a four-level cognitive complexity scale.

Strong American Schools. (2008). *Diploma to nowhere*. Washington, DC: Author.

Available at <http://www.deltacostproject.org/resources/pdf/DiplomaToNowhere.pdf>

Excerpt: This report provides an unprecedented look at the problem of college remediation, with a detailed analysis of the issue as well as a groundbreaking examination of its cost. The report also includes a new nationally representative survey of 688 students in college remediation.

Texas Education Agency. (2008). *Glossary for the Academic Excellence Indicator System 2006–07*.

Available at <http://www.tea.state.tx.us/perfreport/aeis/2007/glossary.html>

Texas Higher Education Coordinating Board. (2008). *Texas college readiness standards*. Austin, TX: Author.

Available at <http://www.theccb.state.tx.us/collegereadiness/CRS.pdf>

Excerpt: The 79th Texas Legislature, Third Called Special Session, passed House Bill 1, the “Advancement of College Readiness in Curriculum.” Section 28.008 of the Texas Education Code, seeks to increase the number of students who are college- and career- ready when they graduate high school. The legislation required the Texas Education Agency (TEA) and the Texas Higher Education Coordinating Board (THECB) to establish Vertical Teams (VTs) to develop College and Career Readiness Standards (CCRS) in the areas of English/language arts, mathematics, science, and social studies. These standards specify what students must know and be able to do to succeed in entry-level courses at postsecondary institutions in Texas.

Tierney, W. G., Bailey, T., Constantine, J., Finkelstein, N., and Hurd, N. F. (2009). *Helping students navigate the path to college: What high schools can do: A practice guide* (NCEE #2009-4066). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Available at <http://ies.ed.gov/ncee/wwc/publications/practiceguides/>

Abstract: Access to higher education remains a challenge for many students who face academic and informational barriers to college entry. This guide targets high schools and school districts, and focuses on effective practices that prepare students academically for college, assist them in completing the steps to college entry, and improve their likelihood of enrolling in college.

Organizations

Achieve, Inc. (2008). *American Diploma Project Network*.

<http://www.achieve.org/node/604>

Thirty-five states—educating nearly 85 percent of America’s high school students—have signed on to the American Diploma Project (ADP) Network. In these states, governors, state education officials, business executives, and higher education officials work together to raise high school standards, strengthen assessments and curriculum, and align expectations with the demands of college and careers. Although all Network states have committed to a common set of key policy priorities, there is no one-size-fits-all approach. Each state has developed its own action plan for carrying out the agenda.

The Association for Career and Technical Education

<http://www.acteonline.org/>

The Association for Career and Technical Education (ACTE) is the largest national education association dedicated to the advancement of education that prepares youth and adults for careers. (See Resources on Transition to Postsecondary Education at <http://www.acteonline.org/content.aspx?id=1278>.) CTE is dedicated to creating a seamless transition between secondary and postsecondary education for students. Now more than ever, a student’s transition from secondary to postsecondary education is vital to CTE students’ success. With a majority of

occupations needing some level of postsecondary education or training, students need as many seamless ways to move forward in their education and careers as possible. In this section, you will find research that highlights and supports: alignment of secondary and postsecondary education standards; articulation of programs between secondary, postsecondary, and higher education; dual enrollment; and programs of study.

ConnectEd

<http://www.connectedcalifornia.org>

ConnectEd's mission is to support the development of Linked Learning (formerly multiple pathways) by which California's young people can complete high school, enroll in postsecondary education, attain a formal credential, and embark on lasting success in the world of work, civic affairs, and family life. (See <http://www.connectedcalifornia.org/pathways/resources.php> for Linked Learning resources.)

Consortium on Chicago School Research at the University of Chicago

<http://ccsr.uchicago.edu>

CCSR conducts research of high technical quality that can inform and assess policy and practice in the Chicago Public Schools. CCSR seeks to expand communication among researchers, policymakers, and practitioners as it supports the search for solutions to the problems of school reform. CCSR encourages the use of research in policy action and improvement of practice, but does not argue for particular policies or programs. Rather, CCSR helps to build capacity for school reform by identifying what matters for student success and school improvement, creating critical indicators to chart progress, and conducting theory-driven evaluation to identify how programs and policies are working.

(While the many papers available on their website are based on Chicago data, lessons may be more broadly applicable, particularly on developing early-warning data systems.)

Data Quality Campaign

<http://www.dataqualitycampaign.org>

The Data Quality Campaign (DQC) is a national, collaborative effort to encourage and support state policymakers to improve the availability and use of high-quality education data to improve student achievement. The campaign will provide tools and resources that will help states implement and use longitudinal data systems, while providing a national forum for reducing duplication of effort and promoting greater coordination and consensus among the organizations focused on improving data quality, access, and use.

The Everyone Graduates Center

<http://www.every1graduates.org>

The Everyone Graduates Center (EGC) is located at the Center for Social Organization of Schools at Johns Hopkins University, one of the nation's leading research universities. The mission of the Everyone Graduates Center is to develop and disseminate the know-how required to enable all students to graduate from

high school prepared for college, career, and civic life. Through a systematic and comprehensive approach, EGC combines analysis of the causes, location, and consequences of the nation's dropout crisis with the development of tools and models designed to keep all students on the path to high school graduation, and capacity-building efforts to enable states, communities, school districts, and schools to provide all students with the supports they need to succeed. (See current work and findings in areas such as "Early Warning and Response Systems" and "Pathways to College and Career.")

First 5 California

<http://www.cafc.ca.gov/default.asp>

First 5 California is dedicated to improving the lives of California's young children and their families through a comprehensive system of education, health services, childcare, and other crucial programs. First 5 California applies a definition of school readiness that is adapted from the National Education Goals Panel (1997):

- 1) Children's readiness for school
 - Promoting physical well-being and motor development
 - Promoting positive social and emotional development
 - Developing approaches to learning
 - Fostering language development
 - Instilling cognitive development and general knowledge
- 2) Schools' readiness for children
 - Creating a smooth transition between home and school
 - Ensuring continuity between early care and education programs and elementary grades
 - Focusing on helping children learn through a student-centered environment
 - Committed to the success of every child
 - Using strategies that have been shown to raise achievement for each student
 - Willingness to alter practices and programs if they do not benefit children
 - Assuring that students have access to services and support in the community
- 3) Family and community support and services that contribute to children's readiness for school success
 - Providing access to high-quality and developmentally appropriate early care and education experiences
 - Providing access by parents to training and support that allows parents to be their child's first teacher and promotes healthy, functioning families
 - Providing access to prenatal care, nutrition, physical activity, and health care that children need to arrive at school with healthy minds and bodies and to maintain mental alertness

The Institute for Higher Education Policy

<http://www.ihp.org/>

The mission of the Institute for Higher Education Policy is to increase access and success in postsecondary education around the world through unique research and

innovative programs that inform key decision makers who shape public policy and support economic and social development.

The National High School Center

<http://www.betterhighschools.org>

The National High School Center, funded by the U.S. Department of Education, identifies research-supported improvement programs and tools, offers user-friendly products, and provides technical assistance to improve secondary education. Resources developed by the Center *and other respected sources* are organized by topic, with a number relevant to the focus of this memo, including:

- Assessment, Accountability, and Data Systems:
<http://www.betterhighschools.org/topics/Assessment.asp>
- Dropout Prevention (with subtopics including Early Warning Signs):
<http://www.betterhighschools.org/topics/DropoutPrevention.asp>
- Graduation (with subtopics including On-Track Indicators):
<http://www.betterhighschools.org/topics/HighSchoolGraduation.asp>
- Transition Into High School:
<http://www.betterhighschools.org/topics/TransitionIntoHighSchool.asp>
- Transition Out of High School:
<http://www.betterhighschools.org/topics/TransitionOut.asp>

The National Dropout Prevention Center

<http://www.dropoutprevention.org>

The National Dropout Prevention Center/Network (NDPC/N) was begun in 1986 to serve as a clearinghouse on issues related to dropout prevention and to offer strategies designed to increase the graduation rate in America's schools. Over the years, the NDPC/N has become a national resource for sharing solutions for student success. It does so through its clearinghouse function, active research projects, publications, and through a variety of professional development activities. (Note: NDPC has an extensive listing of research and programs with strength of evidence indicators. The information in the database can be sorted by elementary programs with evidence they make a difference in dropout prevention.)

Methods

We located the research and resources summarized here by contacting experts in this area and by searching the databases and resources below. These searches, plus reviews of the resulting articles' bibliographies, yielded this paper's core references.

Institute of Education Sciences (IES) Resources: Regional Educational Laboratory Program (REL); IES Practice Guides; What Works Clearinghouse (WWC); Doing What Works (DWW); and IES Centers.

Other Federally Funded Resources: The Assessment and Accountability Comprehensive Center; The Center on Innovation and Improvement; The Center on Instruction; The

National High School Center; and The Center for Comprehensive School Reform and Improvement.

Search Engines and Databases: ERIC; Google; and Google Scholar.

Additional Resources: Data Quality Campaign; WestEd; American Institutes for Research; and the Campbell Collaboration. Also reviewed reference lists of key articles.

This memorandum is one in a series of quick-turnaround responses to specific questions posed by educators and policymakers in the Western region (Arizona, California, Nevada, Utah), which is served by the Regional Educational Laboratory West (REL West) at WestEd. This memorandum was prepared by REL West under a contract with the U.S. Department of Education's Institute of Education Sciences (IES), Contract ED-06-CO-0014, administered by WestEd. Its content does not necessarily reflect the views or policies of IES or the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.