Aligning the K-12 Academic Journey with a Postsecondary Destination

How will state boards of education know their students are building the skills needed for careers? Perhaps by borrowing a chapter from North Carolina, where students' learning progression rises to meet a key measure of career readiness.

by Malbert Smith III and Gary L. Williamson

Although debate about the adoption and implementation of the Common Core State Standards (CCSS) has been extensive, there is unanimity on the importance of college and career readiness standards. States that never adopted the CCSS—such as Texas, Virginia, Alaska, and Nebraska—have fully embraced the notion that standards must prepare students for the real-world demands of college and careers. Even states that are reconsidering their initial acceptance of the CCSS have not backed away from this overarching goal.

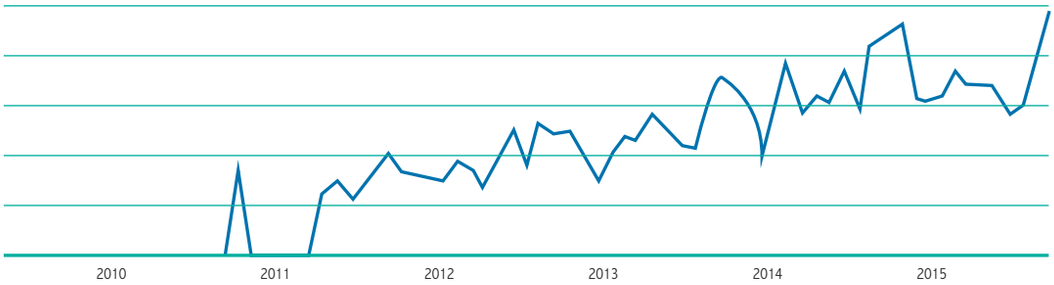
Evidence of the growing interest in college and career readiness abounds. According to Google Trends, web searches on this topic have increased dramatically each year since 2010 (figure 1). Likewise, top literacy experts rate "college and career readiness" as one of the most important goals in education.[1]

An abundance of research laid the foundation for this consensus by showing that too many students graduate ill prepared for the rigors of college or the workplace.[2] Researchers at Stanford framed the problem starkly:

> [H]igh school assessments often stress different knowledge and skills than do college entrance and placement requirements. Similarly, the coursework between high school and college is not connected; students graduate from high school under one set of standards and, 3 months later, are required to meet a whole new set of standards in college. Current data systems are not equipped to address students' needs across systems, and no one is held accountable for issues related to student transitions from high school to college.[3]

Consider reading skills, for example. When one compares measures of text complexity, there are statistically significant gaps between high school texts and texts required in US community colleges, universities, and the

Figure 1. Relative Interest in "College and Career Readiness," as Revealed by Searches, 2010–15



Source: Google Trends.

workplace: Quantified in Lexile® measures, the gaps ranged from 130L for the workplace to 265L in the university.[4]

If statewide assessments are not aligned to these workplace and college requirements of reading and comprehending more complex text, then states will keep promoting a false sense of security that US high school graduates are college and career ready when in fact they are not. No Child Left Behind—which allowed every state to develop its own assessment and set its own proficiency standards—resulted in a psychometric tower of Babel, creating major confusion and public doubt when state proficiency levels differed markedly from those revealed in the National Assessment on Educational Progress, or NAEP.[5] In addition, this illusion of proficiency "was shattered when 'proficient' kids got to college and needed remediation, or entered the workforce with substandard skills."[6] In response, state boards of education have increasingly raised their proficiency cut scores to be more aligned to NAEP.[7]

What more can a state board member do to assure the public that the state assessment program is measuring college and career readiness? Can this program yield data on whether a student has reached a level of reading commensurate with the demands of college and careers? Additionally, does it provide grade-level analysis that tracks a growth trajectory toward that goal?

Begin with the End in Mind

In his 1989 classic *The Seven Habits of Highly Effective People*, Stephen Covey exhorts readers "to begin with the end in mind." When it comes to literacy, the "end in mind" is the ability to comprehend texts that one is required to read at work or college. Alignment with this goal is the litmus test for the assessment of reading in K-12.

Fortunately, states now have access to more sophisticated measurement models that permit the measurement of growth over the developmental lifespan of the learner and across educational institutions. A number of states use The Lexile® Framework for Reading, which places reading ability and text complexity on the Lexile scale. These states can report Lexile reading measures for their students and examine their growth in relationship to the empirical reading demands expressed in Lexile text measures.[8]

Reading Trajectories in North Carolina

North Carolina is one such state. It has aligned its assessments to the "endpoint," raised standards and performance, and built student growth trajectories. North Carolina has long focused on documenting student growth, incorporating that growth into its accountability system, improving its longitudinal data systems, and using multiple analytical strategies. This history made it possible for the state to create developmental growth curves that illustrate the long-term progression of student performance. As their measurement systems and longitudinal data collections have matured, North Carolina has extended its understanding of growth from the simple year-to-year gains it employed 20 years ago, to growth curves spanning grades three through eight (in efforts that began around 10 years ago), to descriptions spanning grades 3 through 11 (in its most recent efforts). We can use these data to juxtapose the relationships between academic standards and student growth (figure 2).

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Figure 2. North Carolina Reading Growth and Achievement Standards (1995-2014) Relative to Text Complexity Requirements for K-12, Careers, and Postsecondary Endeavors

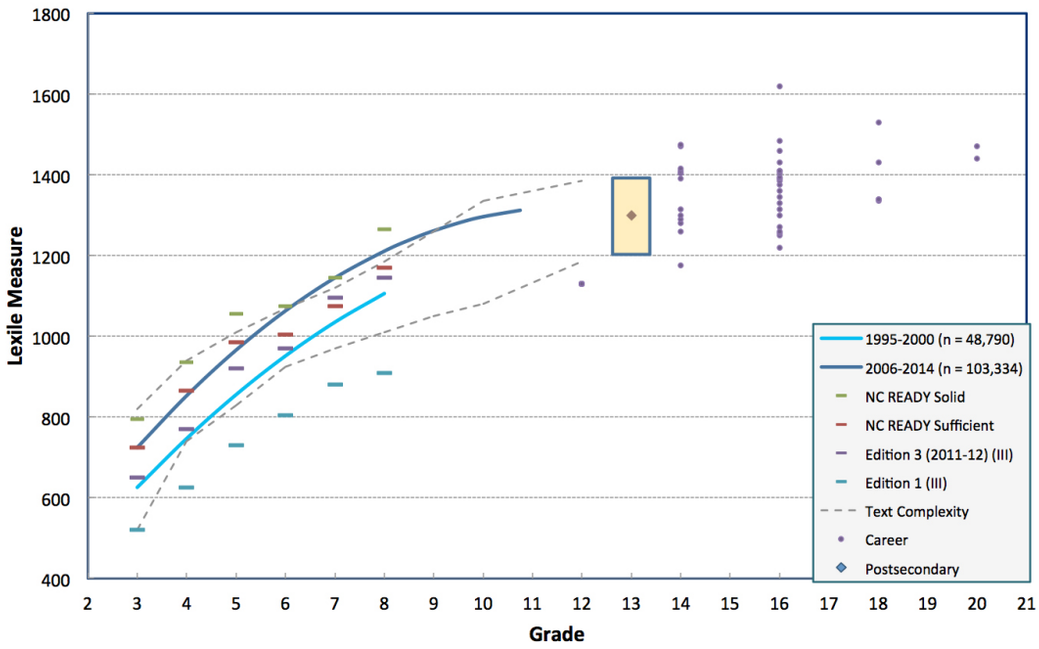

Figure 2 shows two North Carolina reading growth curves that represent different student cohorts; within each cohort, the same students were measured on successive occasions. The lower curve spans grades 3 through 8 during 1995 to 2000, and it summarizes the growth of 48,790 students who had complete data across all six grades. These students constitute 53.6 percent of the students in the cohort group—a respectable match rate, given the decentralized nature of the student information systems and the absence of a uniform student ID in those days. The higher curve spans grades 3 through 11 from 2006 to 2014 and represents 103,334 students, 98.0 percent of the cohort in the state (including those with partial data). This impressive data collection benefited from the implementation of a uniform student ID system and increased attention to constructing longitudinal data collections designed for easy analysis.

Three results are immediately apparent. First, on average, North Carolina reading growth was substantial and consistent in both cohorts, with similar arcs rising rapidly from left to right. Second, student performance increased systemically across all grades and substantially in absolute terms—that is, the more recent curve is significantly higher on the scale than the earlier curve. This is especially notable because the more recent curve is based on a more inclusive and representative sample. Third, North Carolina can now measure student growth over longer periods. The more recent curve incorporates a higher percentage of student records and extends well into the high school years.

Student Performance Rises to Meet Standards

Over 20 years, North Carolina implemented several editions of assessments as its curriculum standards were revised. With each edition, the state board of education (SBE) raised standards. Proficiency cut scores are depicted in figure 2 as small bars arrayed in columns at grades three through eight. For the first three editions of its end-of-grade (EOG) tests, North Carolina had four achievement levels; Level III was deemed to represent grade-level performance. In its fourth edition of tests, called NC READY, the state defined five levels of performance, with the two highest being "sufficient" and "solid". The Level III cut points are shown for the first and third editions of EOG tests; the sufficient and solid cut points are shown for NC READY. Because all the cut scores have been translated onto a

common scale, one can readily see that the SBE dramatically raised reading standards over the four editions of assessments.

With student growth and state achievement-level standards expressed on a common scale, it is possible to compare student aggregate performance directly to achievement-level standards without resorting to a relative scale (e.g., percent proficient). When one examines the cut points in relation to the student growth curves, it becomes apparent that student growth and performance rose to meet the higher expectations that the SBE set.

Text Complexity Standards

Over the last five years, the National Governors Association's Center for Best Practices and the Council of Chief State School Officers have helped states collectively arrive at general agreement regarding text complexity levels that are aligned with college and career readiness. The dashed lines in figure 2 represent text complexity standards for grades 3 to 12.

Clearly, North Carolina's achievement-level standards for the first edition of EOG tests were not well aligned with the text complexity ranges (which of course were defined years later). However, the SBE's efforts over time to raise achievement-level standards brought their achievement levels for subsequent editions of tests into very good alignment with the text complexity requirements. Concomitantly, North Carolina student achievement improved so that student growth on average now tracks well with college and career reading demands.

Postsecondary Reading Demands

Our research on the difficulty of postsecondary reading materials in colleges, universities, the workplace, the military, and other citizenship endeavors has revealed that the typical level for postsecondary reading materials is 1300L.[9] Additionally, the middle 50 percent of sampled reading materials in our studies ranged from 1200L to 1380L. A yellow box at grade 13 depicts these results, with a diamond at 1300L (figure 2). This convention summarizes the reading demand of a wide variety of postsecondary materials, many of which directly relate to postsecondary educational experiences and workplace reading requirements.

Two things stand out. First, text complexity standards adopted by many states align very well with the postsecondary reading materials at the boundary between grades 12 and 13. Second, expressing all these measures on a common scale shows clearly that North Carolina student growth on average aligns well with postsecondary reading requirements.

Career Text Requirements

We have determined the typical reading difficulty of samples of reading material from a variety of "Bright Outlook" occupations, which got this designation because they are characterized by rapid growth, numerous job openings, or are newly emerging occupations.[10] Median text complexity measures for selected career text collections are plotted in figure 2 by the number of years of required education associated with career entry. The "grade" where these measures are plotted represents years of required education (e.g., grade 12 represents that a high school diploma is required for career entry; 14 means that two additional years of education are required beyond high school—namely, an associate's degree; 16 corresponds to a bachelor's degree; 18 to a master's; and 20 to a doctorate).

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Several findings are notable. Generally, a systematic increase in career reading demand accompanies increases in years of required education. At each level of education (i.e., grade), there is variability in reading demand across careers. Many careers demand comprehension of reading materials that are more complex than typical postsecondary reading materials: Note how many dots lie above the median postsecondary reading materials represented by the diamond plotted within the box at grade 13. The single dot at grade 12 represents the reading demand (1130L) associated with careers that require only a high school diploma. It represents the lowest level of reading ability required by any career examined to date.

Increasingly, we have been able to populate figure 2 with measures of text requirements and performance standards related to college and career readiness. However, the measurement of student growth and performance tends to cease around grade 11 in high school, as indicated by the fact that the growth curves do not extend beyond that point. A provocative question: How

can we extend measurement of student ability into the postsecondary years to confirm that a well-aligned journey in fact leads to success in the many possible endeavors that students may choose?

Key Considerations for State Boards

Figure 2 demonstrates how one can longitudinally chart the progression of students' reading ability and whether their trajectory is one of college and career readiness. The two student growth curves represent the average scores of 48,790 and 103,334 North Carolina students respectively. While for purposes of overall statewide performance this aggregation is fine, it is also possible to build individual growth trajectories. For example, it is possible for students and parents to tell whether their individual growth trajectories align to their postsecondary education goals.

By using a common scale, state boards can monitor the trends in both performance and expectations.

Other states can glean a key lesson from North Carolina's example regarding three fundamental factors for discerning their students' career readiness: data systems that permit longitudinal analyses, a common scale for student reading ability and text complexity (e.g., the Lexile scale), and empirical, objective measures for documenting the reading requirements in careers and postsecondary education.

One happy, serendipitous outcome revealed in the North Carolina analysis is that student performance improved as the state board raised standards. By using a common scale, state boards can monitor the trends in both performance and expectations.

The gap or disconnect between K-12 and the postsecondary world of college and careers is not a new phenomenon. Almost 100 years ago, Wilson and Hoke opined thusly:

> The college instructor blames the high school teacher, the high school teacher complains of the grade teacher, each grade teacher above first grade finds fault with the poor work of the teacher in the grade below, and the first grade teacher in turn is chagrined at the shortcomings of the home training. Must this go on indefinitely? Whose opinion shall prevail? Is it not possible to get away from personal opinion to an agreed-upon consensus of opinion? May we not replace the constantly conflicting subjective standards with definitely defined objective standards?[11]

The North Carolina example gives us confidence that this perennial finger pointing and complaining can be finally put to rest. By examining reading growth longitudinally and connecting this growth to the real-world reading demands of occupations and higher education environments, state board members can have confidence that their state's assessments are aligned to college and career readiness. ■

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[1]International Reading Association, "The International Reading Association Hot Topics in Literacy Education for 2014 Survey," *Reading Today* (September/October 2015).
[2]D. T. Conley et al., *Reaching the Goal: The Applicability and Importance of the Common Core State Standards to College and Career Readiness* (Eugene, OR: Educational Policy Improvement Center, 2011).
[3]A.Venezia, M.W. Kirst, and A. L. Antonio, *Betraying the College Dream: How Disconnected K-12 and Postsecondary Education Systems Undermine Student Aspirations* (Stanford, CA: Stanford Institute for Higher Education Research, 2003), p. 1.
[4]G. L. Williamson, "A Text Readability Continuum for Postsecondary Readiness," *Journal of Advanced Academics* 19, no. 4 (2008): 602–32.
[5]M. Smith, "The Need for Objective Measurement under the No Child Left Behind Act," White Paper Series (Durham, NC: MetaMetrics, 2004).
[6]R. Pondiscio, "Now the Real Common Core Fight Begins," *US News and World Report* (September 11, 2015).
[7]V. Bandeira de Mello, *Mapping State Proficiency Standards onto NAEP Scales: Results from the 2013 NAEP Reading and Mathematics Assessments* (Washington, DC: National Center for Education Statistics, 2015).
[8]We invoke results from our research in a variety of spheres: On student reading growth, see G. L. Williamson, "Measuring Academic Growth Contextualizes Text Complexity," *Pensamiento Educativo: Revista de Investigatión Educacional Latinoamericana*, forthcoming; state achievement level performance standards; on widely adopted, text-complexity standards for public education, see G. L. Williamson, J. Fitzgerald, and A. J. Stenner, "Student Reading Growth Illuminates the Common Core Text-Complexity Standard: Raising Both Bars," *Elementary School Journal* 115, no. 2 (2014): 230–54; on postsecondary reading requirements, see A. J. Stenner, E. Sanford-Moore, and G. L. Williamson, "The Lexile® Framework for Reading Quantifies the Reading Ability Needed for 'College & Career Readiness,'" MetaMetrics Research Brief (Durham, NC: MetaMetrics, 2012); and on career text research, see G. L. Williamson and R. F. Baker, "Enriching the Concept of Career Preparedness by Examining Text Complexity Associated with Bright Outlook Occupations," MetaMetrics Research Brief (Durham, NC: MetaMetrics , 2013).
[9]Stenner et al., "The Lexile Framework for Reading," and Williamson, "A Text Readability Continuum."
[10]Williamson and Baker, "Enriching the Concept of Career Preparedness."
[11]G. M. Wilson, and K. J. Hoke, *How to Measure* (New York City: The Macmillan Company, 1928), 551.