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**College Preparation and Grade 12 NAEP\***  
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**Executive Summary**

*This paper presents evidence concerning the lack of academic signals and preparation that undermines postsecondary persistence and completion at broad access postsecondary education. For example, placement exams are a gatekeeper to postsecondary credit level courses, but few K-12 students or teachers know about them. Discrepancies between K-16 assessments abound, as well as differences between high school graduation and college entrance standards.*

*NAEP's Grade 12 assessment could play a role in mitigating these problems. Various pro and con arguments are presented for NAEP using "college readiness" as one of its measurement objectives. There are both technical and political issues to be overcome.*

*Assessment and standards policies are made in separate K-12 and postsecondary orbits that rarely deliberate on common problems. NAGB could play an important role in bringing about a novel K-16 conversation regardless of the outcome for revising the objectives and content of Grade 12 NAEP. But it is not clear how any of these possible college readiness policies will improve student motivation to attain high scores on NAEP.*

**Overview of the Problem**

America's high school students have higher educational aspirations than ever before, yet

these aspirations are being undermined by disconnected educational systems and lack of signals about adequate preparation. Eighty-eight percent of 8th graders expect to participate in some form of postsecondary education, and approximately 70 percent of high school graduates actually do go to college within two years of graduating.<sup>1</sup> These educational aspirations cut across racial and ethnic lines with scant differences.<sup>2</sup> Over the past few decades, parents, educators, policymakers, business leaders, community members, and researchers have told students that, in order to succeed in our society, they need to go to college. High school students have heard that message, and they are planning on attending college, but their plans are thwarted by remediation and low completion rates. The nation's need for a highly educated labor force in the 21<sup>st</sup> Century is in jeopardy. A large percentage of students do not continue for a second year of college, and 41% who earn 10 or more credits at a two or four-year school, never complete a two or four-year degree (American Council on Education, 2002; Adelman, 1994.) A revised Grade 12 NAEP could help provide clearer signals to students about necessary college preparation, and provide the nation with trend data on college readiness. NAEP is a unique assessment because of its nationally representative samples, independence within the federal government, trend data, and public awareness.

Inadequate and inequitable preparation for college affects remediation and persistence rates — major problems in postsecondary institutions throughout the country. In 2002, the Education Testing Service concluded that “the proportion of young adults (Age 19-25) getting a bachelor's degree, after rising throughout U.S. history, stabilized at between 21% to 25% beginning 25 years ago, and only began to rise slightly again in 1996 (Barton, 2002).” One cause of this low completion rate is students' inability to do credit-level work when they enter college, and their need for remediation. A new ACT study of their test takers estimates only 40% of

students are prepared for college-level mathematics (ACT, 2003). For example, 40 percent of students in four-year institutions take some remedial education as compared with 63 percent at two-year institutions.<sup>3</sup>

Remediation problems are the greatest in “broad access postsecondary institutions,” or institutions that admit almost every student who applies. Broad access institutions comprise about 85 percent of all postsecondary institutions and educate approximately 80 percent of the nation’s first-year college students.<sup>4</sup> For example, about 45% of first-time college students enroll in community colleges that have no requirements for admission. Inadequate student preparation is widespread in these broad access institutions, and remediation rates are above 55% in most of them. College scholarship and outreach programs frequently are not targeted at these students. Media attention to affirmative action is intense, but less than 15% of students attend institutions that are highly selective, and must consider affirmative action. Most media and public attention, however, focuses upon the approximately 20 percent of students who attend the most selective four-year institutions that have the best prepared students, and have robust assessment systems to sort and select applicants. The current fractured systems send students, their parents, and K-12 educators conflicting and vague messages about what students need to know and be able to do to enter and succeed in college. At broad access institutions the critical academic standard is a placement exam, rather than any admissions criteria.

Students at broad access institutions take placement exams when they enter, and these are the pathway to college-level credit courses. Many of these students work at jobs for many hours while attending postsecondary education at night or other convenient times. K-16 curriculum and assessment connections are inadequate, and secondary school students receive weak and confusing signals about necessary academic preparation to pass placement exams. In the six

states studied by the Bridge project, there was scant awareness by postsecondary education policymakers, administrators, or teachers of K-12 standards or tests. Secondary school students know they will be admitted to broad access institutions if they meet minimum GPA and course requirements, or are over 18, so they often take few academic courses (especially math) in their senior year. Consequently, they are not prepared for placement exams, and end up in non-credit remedial courses. Recent studies by RAND Corporation, Education Trust, and Achieve found significant content and depth differences between K-12 and placement exams.<sup>5</sup>

Despite their crucial role as gateways to credit-level courses, public information on the content of placement exams is scant, and not well publicized to prospective students or secondary schools. The content and cognitive demands of placement exams are a “dark continent” in terms of the research literature when compared to the SAT or ACT research base. Commercial designers of placement exams regard their content as proprietary and for the internal use of client postsecondary institutions. Many higher education departments devise their own placement exams.

Students at broad access institutions are admitted under one standard, but placed in credit courses or remediation on another placement standard that is often much higher (e.g. math at, or above, Algebra II). Secondary school students wrongly believe that their high school graduation requirements are sufficient for postsecondary credit-level work, and rarely know about the consequences of placement failure that leads to starting college in a risky manner. Students who begin in remedial reading and math courses take longer to complete programs, and have a lower probability of finishing their desired academic program (including vocational education certificates). Low-income and minority students are harmed the most (Venezia, Kirst, & Antonio, 2003).

Placement exams have not been part of the K-12 standards movement that has swept across the U.S. Indeed, the entire K-12 standards movement has lacked participation and buy-in from postsecondary policymakers, because standards policies are made in separate K-12 and higher education orbits that rarely intersect. While there are some new encouraging developments, however, such as adding a writing sample to SATI and ACT, the K-16 dialogue has not extended to placement exams. Broad access institutions use SAT or ACT for admissions decisions on a very occasional basis. Placement exams are extremely diverse with many institutions using academic departmental faculties to devise a local exam. A few states like Texas have a statewide exam, but Texas colleges also use their own placement exams. In the southeast United States in 1992, for example, there were nearly 125 combinations of 75 different placement tests devised by universities with scant regard to secondary school standards. California community colleges use over 60 different placement exams.

A reasonable definition of college readiness would be a student's preparation to begin credit-level postsecondary courses in basic subjects such as language arts and mathematics. Placement tests are one measure of this competence. Since No Child Left Behind establishes NAEP's role as a confirmatory measure of state assessment systems, this new role could be extended to college readiness. NAEP has played a crucial role in providing a common standard within an environment of numerous state and local K-12 tests. The difference between senior high school and postsecondary assessments is large and could benefit from a K-16 NAEP role.

### **Current Assessment Disjunctures Between K-12 and Postsecondary Education**

RAND researchers, conducting research for The Bridge Project, found the following discrepancies in the studied subject areas:

**MATHEMATICS:** State high school assessments are more likely to contain open-ended items

than are either college admissions or college placement tests. State assessments are also most likely to include items framed within a realistic context. College admissions exams, as well as college placement tests, assess intermediate algebra and trigonometry to the greatest extent. College admissions exams are also most likely to contain logic items, which are generally absent from other types of assessments. College placement measures contain, on average, the highest proportion of procedural knowledge items; college admissions exams contain the fewest. Unlike the NAEP Grade 12 framework, many college mathematics placement tests do not contain significant coverage of data, probability, and statistics. Problem-solving items are relatively uncommon, but are most likely to be on college admission tests, followed by state assessments, and then college placement tests.

**READING:** Most of the reading tests measure reading proficiency solely with multiple-choice items. College admissions tests are more likely than either college placement or state high school to assess inference skills.

**EDITING:** College placement tests are more likely to assess recall skills than are state tests or college admissions exams.

**WRITING:** Few college admission exams or commercially-available placement tests require students to produce a writing sample. In contrast, the majority of state high school tests require a writing sample.<sup>1</sup>

A recent study by ACT indicates that high school and college educators emphasize different writing skills which is one of the reasons for high remediation. While college instructors ranked “grammar and usage” as a student’s most important writing skill, high school teachers ranked this least important behind sentence structure, writing strategy, organization,

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<sup>1</sup> \*For more data from RAND’s analyses, please see the project’s website at <http://bridgeproject.stanford.edu>.

punctuation, and style (*Chronicle of Higher Education*, 4/9/03). NAEP 12<sup>th</sup> Grade writing scoring guides do not rank “grammar and usage” as important as college instructors do.

Education Trust data in Table 1 confirms these discrepancies among various K-12 and higher education assessments.

**Table 1. Distribution of Topics on Standardized Math Tests**

	Percentage of questions devoted to					
	Algebra 1	Geometry	Data, probability, statistics	Number theory, arithmetic, combinatorics, logic	Algebra 2	Trigonometry/precalculus
<b>Privately developed high school assessment tests</b>						
TerraNova	14	29	23	21	0	0
Stanford 9 m/c	29	25	25	21	0	0
<b>State high school assessment tests</b>						
Kentucky (CATS)	9	33	17	18	20	0
Massachusetts (MCAS 10)	23	28	13	18	13	5
New York	29	26	9	26	9	3
Texas (TAAS)	12	23	3	53	0	0
<b>College admissions exams</b>						
SAT 1	47	23	3	23	3	0
ACT	25	27	5	18	12	8
<b>Privately developed college placement tests</b>						
Compass	14	23	0	19	25	15
Accuplacer al	25	0	0	0	75	0
Accuplacer cl	16	0	0	0	63	21

Source: Education Trust, 1999.

\* al = Algebra

\*\*cl = Calculus

Anything that could help bring order out of this assessment fragmentation, and provide students with better signals about college would help college preparation and success. This brings us to the potential, possible objections, and issues concerning a postsecondary role for NAEP.

### **NAEP and College Readiness: The Case for Action**

At the present time no one knows the status of student readiness for college. The 20% of students who go to selective institutions take SAT/ACT, so we know something about their

potential. But more first-time students enroll in community college than selective four-year institutions, so there is a vast gap in our nation's knowledge. If more than 70% of graduates go to postsecondary, then NAEP needs to do more than look backwards to what is learned in secondary schools.

There is currently no nationwide measure of college readiness or a conceptual consensus on what credit-level, non-remedial postsecondary work requires. NAEP could create a new dialog about these issues. NAEP subject matter frameworks, objectives, and standards could galvanize a K-16 nationwide discussion that has not taken place in U.S. history. A NAEP focus on the two and four-year broad access institutions would enlarge the traditional media coverage and public debate surrounding highly selective institutions. Advanced Placement (AP) required colleges and high schools to deliberate on assessment standards based in part on College Board surveys of typical four-year college courses (Kelly, 1994). AP is used mostly by selective four-year schools. But NAEP could sample students who attend the 5,000 postsecondary institutions eligible for Pell grants, and NAEP performance levels could signify student readiness for various types of postsecondary institutions ranging from the most selective to open enrollment.

Even NAGB discussing college readiness issues would stimulate K-16 meetings that otherwise would have no venue or incentive to occur. There is no current Grade 12 assessment that is designed to measure readiness for all college bound high school students. Some four-year institutions use either SAT or ACT, but broad access institutions use a wide variety of placement procedures. Student ability to undertake credit level (non-remedial) work after high school is a reasonable academic standard for a rapidly changing 21<sup>st</sup> Century economy.

Although many states now test at the high school level (and eventually all will because of NCLB), these tests are not aligned with postsecondary education. An analysis of these tests

conducted by Standards for Success (S4S) illustrates the diversity that exists among these state tests (Conley, 2003). When analyzed against a set of standards that specify the knowledge and skills necessary for success in entry-level university courses, state tests demonstrated wide variance in the degree to which test items matched college success standards, and the degree to which the cognitive complexity of the test items was consistent with postsecondary preparation. Given this variation, NAEP could provide a more consistent measure across states, and provide a reference point for ascertaining the degree to which a state test measured knowledge and skill necessary for university success.

Parents and students would benefit from this new NAEP role, especially those seeking broad access institutions. NAEP results, concepts, and trends could be a new source of information about college standards. Community college prospects, for example, often think college is only slightly different and more demanding than high school, but they are wrong (Venezia, Kirst, Antonio, 2003).

Secondary educators are largely unaware of standards at the next level, other than AP. NAEP could give them much needed information about what their students need to know and be able to do. Placement standards are only one component of this, because as S4S demonstrated, first year college instructors want much more preparation than placement tests contain. Recognizing patterns is desirable for college preparation, but patterns are not stressed in most placement tests. Perhaps even more important than how many subjects are included in NAEP is the depth of knowledge and skills assessed. College requires analytical and integrative skills that are broader than many placement tests. This requires NAEP to transcend the placement test vision embodied in the current postsecondary mathematics and English departmental view of college readiness. There are numerous studies of SAT/ACT predictive validity using college

grades and credits as a basis. Usually this predictive validity research ends with correlations with first-year postsecondary grades. NAEP could also study placement results longitudinally for several years of college. NAEP could follow a sample of high school students longitudinally, in college, but this would take time and money. But state policymakers and educators might be persuaded that NAEP 12 could provide important predictive information, and save costs on remediation.

In sum, the NAEP 12<sup>th</sup> Grade exam has potential to span the boundary between secondary and postsecondary education. No K-12 statewide assessments are designed to measure college readiness. Most state tests end at 10<sup>th</sup> Grade, a few continue to 11<sup>th</sup> Grade, and only the New York Regents has some subject matter exams at the 12<sup>th</sup> Grade. K-12 tests are based on high school, not college standards, as the Standards for Success data document (Conley, 2003). AP is geared for college-level course completion, not preparation. SAT/ACT are used by selective postsecondary education, so many students do not take these tests. Placement exams are numerous, varied, and largely unknown, and are designed to serve the assessment needs of departments within postsecondary institutions. Placement exams focus overwhelmingly on language arts and mathematics, not the broader subject array in NAEP tests. Consequently, NAEP can expand the subject matter focus of college readiness, as well as provide a bridge between two levels of the education system in the basic subjects.

NAEP is not a longitudinal cohort design so answering the “why” questions concerning college success is a lot more uncertain than measuring what students know and can do. But since there is such a strong data-base for the crucial role of secondary school coursework such as Algebra 2, NAEP Grade 12 should include questions on students’ course taking patterns (Adelman, 1999). Moreover, there is evidence that some students regress during the senior year

because of their light academic course loads (Kirst, 2001). Consequently, NAEP should include questions on senior year course content. Special analysis could be included comparing results by race, ethnicity, gender, and whether students plan to attend selective or non-selective postsecondary institutions.

### **The Case Against a New NAEP Role**

Redesigning NAEP 12 to assess college readiness is a whole new orientation for a long-standing longitudinal program. It partly shifts NAEP's focus from measuring what is taught in K-12 to a murky, unexplored territory of college readiness for thousands of different postsecondary institutions. These institutions range from those that select one out of 17 applicants to others that accept anyone over Age 17 into a short vocational program. There are no explicit postsecondary content standards or outcome assessments like K-12. There is no agreement among postsecondary educators concerning the subject matter frameworks that would be appropriate for credit-level postsecondary placement.

Community colleges provide considerable transfer credits for the BA, so some community college departments contend their academic standards should be the same as four-year institutions. Other community college educators believe their mission is more vocational and traditional postsecondary placement mathematics standards lack practical application. Most four-year institutions accept over 85% of their applicants. They have placement procedures, but there is huge variation. Given this diversity of interest, it would be very difficult for NAGB to create a "representative" panel of postsecondary individuals to deliberate on subject matter frameworks, performance levels, test criteria, etc. Moreover, since postsecondary rarely meets with K-12, it is hard to envision what a "representative" K-16 NAGB panel would look like. College Board has some experience with this, but it is not very active at the community college

level where about 50% of first-time students enroll. NAEP assessment framework subject panels are no longer required by law to represent a national consensus, but areas of agreement might be hard.

Higher education institutions, leaders, and lobby groups will be wary of an expanded NAEP role. They fear extension of K-12 state and federal testing and accountability policies to postsecondary, where they contend the policy fit is worse. Postsecondary cannot agree on two or four-year outcome measures, so a Grade 12 readiness assessment could be a baseline that would cause pressure to assess the value added of postsecondary. NCLB seems to many postsecondary people as a dangerous precedent for misguided higher education testing. Under NCLB, NAEP has a significant, but strictly informal and as yet undefined role as a confirmatory measure of varied state assessment systems, so higher education would fear the same process would be extended to them.

K-12 educators will not see a Grade 12 NAEP as useful for pupil diagnostic purposes, because it comes so late in a student's career. Also, the late timing mitigates usefulness for students and parents to think about college readiness during the last two years of high school, unless the implications are derived for preparation in the earlier grades. NAEP's strength is that it provides national and state data with explicit standards. This makes it useful as a heuristic instrument, but not as a practical tool for school site or pupil improvement.

It is unclear how a college readiness function would enhance student motivation to try hard on NAEP 12. There are no direct stakes or feedback for students. NAEP 12 could be useful for evaluation of K-16 state systems, but not of individual schools.

Any NAEP use for college readiness will raise questions about assessing high school transition to work. Some students do not enter college and proceed to work after high school

graduation. The distinction between ready for college and ready for further learning in the work place is not clear. Colleges may want Algebra 2, but do employers of high school graduates? These are different but related issues, and trying to address both in the same assessment will be challenging. But the omission of either one will lead to organized objections. Most high school graduates blend college and work. In sum, NAEP Grade 12 deliberations concerning appropriate test frameworks could end up like the recent inability to reach a rapid agreement on a world history assessment.

### **Concluding Thoughts**

In an era when between 70 and 80% of high school graduates proceed on to postsecondary education, it is antiquated to think of NAEP as ending with a high school focus. In 1903, the nation was discussing transition from 8<sup>th</sup> Grade to high school. It is 2003, and it is probable that our successors will think that Grade 12 is like Grade 8 in 1903. Moreover, the U.S. has an economy that requires most employees to change jobs and learn new skills as a adult. The postsecondary purposes of the current NAEP 12 are not clear to the public or educators.

But the obstacles to a NAEP 12 college readiness focus are formidable and daunting. The U.S. has no K-16 system or institutional center to decide college transition issues. We created two separate higher and lower education systems that move in separate policy orbits. Moreover, American postsecondary is diverse, fragmented, and includes thousands of public and private institutions. Who speaks for this behemoth?

The American public is highly satisfied with the performance of postsecondary education despite massive lack of preparation, persistence, and completion (Immerwahr, 1999). The media focus is on the most selective institutions that dominate the public's perception. U.S.

business organizations are highly involved and critical of K-12 quality, but have not been very visible with postsecondary education problems or accountability.

The technical issues seem doable, but will require considerable research concerning placement exams, postsecondary credit concepts, predictive validity, and the depth, breadth, and nature of student knowledge and skills needed at college entry level (Conley, 2003). Given the current disjuncture between the two levels of education, NAGB could provide a significant service by merely deliberating on Grade 12 college readiness standards and assessments. The deliberative process could be an important event in the current fractured K-16 environment.

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## Endnotes:

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- <sup>2</sup> The Education Trust. Fall 1999. "Ticket to Nowhere. The Gap Between Leaving High School and Entering College and High Performance Jobs," in *Thinking K-16*, Vol. 3, Issue 2, Washington, DC: The Education Trust.
- <sup>3</sup> U.S. Department of Education. 2001a. *The Condition of Education*, Washington, DC: National Center for Education Statistics, p. 148.
- <sup>4</sup> Calculations were based on data from Carnegie Foundation for the Advancement of Teaching. 2001. *The Carnegie Classification of Institutions of Higher Education*, Menlo Park, California. Researchers checked the Carnegie classifications with College Board data concerning the percentage of applicants accepted by postsecondary institutions, and with data in Mortenson, T. 1998. "Freshman-to-Sophomore Persistence Rates by Institutional Control, Academic Selectivity and Degree level, 1983 to 1998," in *Postsecondary Education Opportunity*, Oskaloosa, Iowa.
- <sup>5</sup> Education Trust, 1999, op. cit. See also Le, V. [Alignment among Secondary and Postsecondary Assessments](#) (Santa Monica: RAND, 2003).