

PUBLIC HEARING ON HIGH SCHOOL REFORM

PA State Board of Education
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Members of the Board -- I appreciate the opportunity to speak to you today on the topic of high school reform.

I bring a perspective shaped by my 30 years at Penn State University, comprising 15 years on the faculty in the College of Engineering and another 15 administering to admissions, enrollment management and undergraduate education at the campus, college and university levels.

At Penn State we have over 90,000 students, including almost 80,000 undergraduates enrolled at 21 campuses throughout the Commonwealth. We are keenly aware of the need for strong, coordinated commitments by both the K-12 and higher education communities to prepare our young people for the challenges of the global workforce of the 21st century. As previously communicated in a letter to the Board last May, we believe that initiatives to insure that high school students learn and can demonstrate basic competencies in core areas prior to graduation represent sound public policy. Students who leave high school without such a foundation will face a steep climb to postsecondary success and face daunting challenges if they enter the workforce directly.

My testimony will touch on the following factors that I've had the opportunity to see at close hand:

- The preparedness of entering students to address college-level work and what this portends in regard to prospective students' potential for success.
- The experience we have with student placement in key undergraduate courses, and the advantage that could be realized by early intervention to remedy identified deficiencies.
- Current trends in college student performance and persistence, especially in the STEM disciplines, in relation to the content and rigor of their educational track.

The extant trend of increasing undergraduate applications attests to the current, highly competitive admissions environment at Penn State. Over 30% more applications have been received for the summer/fall 2009 admissions cohort compared to the same date of 4 years ago. Historically, the high school cumulative GPA has shown a strong correlation to subsequent first-year college performance, and thus the admissions criterion at Penn State is based primarily on this measure of high school

academic work. To be meaningful, however, this measure must be representative of a rigorous high school curriculum and aligned with college entrance requirements composed of sufficient high school units in English, Math, Laboratory Science, Arts/Humanities/Social Sciences, and Foreign Language. Potential for successful college study in the STEM and liberal arts/professional fields is further evaluated using math and verbal scores, respectively, on entrance examinations such as the SAT or ACT, including more recently, the writing component. Long experience has shown that an algorithm that gives additional consideration for high school work completed at an advanced level is a strong predictor of first-year college success. In addition to advanced secondary-level curricula, this is manifested in several ways at Penn State. Enrollment of high school students in their junior and senior years in credit courses at Penn State campuses has more than doubled in the last two years to over 1,300 students and over 5,500 – almost a third – of the first year students beginning study at Penn State in 2008 transferred in over 57,000 college course and advanced placement credits.

All of the above speak to the importance and viability of encouraging mastery in key subject and skill areas to the greatest extent possible prior to enrollment in college, and of providing alternative paths to accomplish this objective. Multiple options for assessment that aid in ascertaining that high school courses, grades and other academic experiences measure up to consistent, international standards and academic intensity would further improve the ability to accurately project and ensure student academic potential and success. Likewise, accepting alternatives such as proficient performance on advanced placement examinations will avoid the imposition of redundant measures for those already demonstrating the propensity to excel.

Following their admission to college, additional evidence of our nearly 17,000 first-year students' preparedness for college work is furnished by in-house placement tests in mathematics, English and chemistry. Studies of the placement test outcomes, conducted in conjunction with a fairly recent transition from paper to web-based administration of the tests, verified that all four math subscores (basic math, algebra I, algebra II and trigonometry) as well as the total score were positively and significantly correlated with math SAT scores. The scores defining placement into the various levels of college or precollege course work in all the tested subject areas are reevaluated periodically by content experts and reset as needed. While the need for remediation constitutes only 2% of overall student credit hours university-wide, up to 10% of students typically require some attention to pre-college math, and 25% need at least one course in pre-college English composition. Rates for associate degree students are higher. Performance in college-level courses subsequent to remediation is good, with over 80% earning satisfactory or better grades in English and 60% doing satisfactory or better work in entry-level college math.

These data point to the need for good diagnostic evaluations administered early enough to remedy identified deficiencies before students enter college. The recently released study by the Penn State research team of Sperling and Kulikowich on the validity of local assessments of mathematics and reading proficiency revealed considerable variation in both their alignment with academic standards and the practices used to establish proficiency.

The impact of deficient preparation is disproportionately felt in the STEM disciplines, for which leakage of students from the pipeline occurs steadily throughout high school and into the early years of college. When students fail to stay on track in the math sequence needed for engineering and science disciplines, they face significant hurdles in catching up, need to spend much longer in foundational studies and often transfer out of these disciplines all together. Although students who start their studies at University Park in science or engineering graduate at rates above 80% as do their undergraduate peers in other fields, only a half to two-thirds complete degrees in these majors, with the remainder transferring into other academic colleges. Our nation can ill-afford this loss of talent.

In summary, it is paramount that curricular rigor and academic intensity be assured in high school. A variety of measures are needed to give students a target – a body of knowledge and standards for the competencies to be mastered. Careful research needs to be done to identify the characteristics of local assessments or other GCAs that can be used to reliably measure alignment and proficiency. New subject-area requirements for graduation should reinforce the development of communication, critical thinking and collaborative problem-solving skills needed in today's world and workforce to enhance students' access to college and vocational preparation. Follow-up studies will be needed to directly correlate the results of the assessments to real college and career success.

Thank you very much.