

**Preliminary Findings**

**THE FIRST YEAR:  
10<sup>th</sup> Grade Benchmark Standards and First Year College Performance (2001-  
02)**

**A Briefing to the Joint Boards of Education Working Group  
February 10, 2003**

**Oregon University System  
Oregon Department of Education  
Office of Community Colleges and Workforce Development**

## **Background and Purpose of Study**

The freshman class entering Oregon University System institutions in fall 2001 was admitted on the basis of meeting traditional college entry requirements. These requirements included: (1) earning a high school diploma or the equivalent; (2) meeting the high school grade point average (HSGPA) required by each campus; and (3) successfully completing 14 high school subject area courses in English, math, science, social science and second languages. In addition, applicants were required to present their scores on either SAT or ACT assessments.

The freshman class that entered OUS institutions and the state's community colleges in fall 2001 is also the first group of Oregon students to have additional information about performance on academic standards at the 10<sup>th</sup> grade benchmark as part of the requirements of the Oregon Education Act for the 21<sup>st</sup> Century which was passed in 1991 and amended in 1995. This performance was measured by the Oregon state assessment system in four areas: reading/literature, writing, math problem solving, and math knowledge and skills.<sup>1</sup> The assessments, which were taken by the students in this study in 1999, were not required for admission to OUS institutions or for enrollment in community colleges in fall 2001.

The First Year Study examines the usefulness of the additional information supplied by state 10<sup>th</sup> grade benchmark assessments on performance on academic standards in predicting students' success in their first year of college and their persistence beyond the freshman year. Predictors of college success include: (1) overall freshman-year GPA, (2) GPA by subject areas, and (3) persistence beyond the freshman year to fall 2002 enrollment.

Preliminary findings indicate a positive relationship between performance on academic standards at the 10<sup>th</sup> grade benchmark and successful performance in first year college courses. A more extensive report, to be released on February 24, 2003, will indicate the usefulness of this additional information in predicting and improving student success in college and persistence beyond freshman year.

## **Study Design and Methodology**

### Research Questions

Question #1: How does the performance of incoming Oregon students on state benchmark assessments compare with their subsequent performance in college level coursework?

Question #2: What is the relationship of state assessments, high school GPA, college GPA, and the SAT to first year college performance?

Question #3: What is the value of the state 10<sup>th</sup> grade benchmark assessment for predicting college success?

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<sup>1</sup> Because the science knowledge and skills assessment was field tested in 1999, it was not used as part of this study.

## Description of Cohort

Using 1999-2000 data provided by the Oregon Department of Education, a “standards cohort” of students was identified. The cohort consists of students who participated in state assessments while in high school and subsequently enrolled in an OUS institution or an Oregon community college in fall 2001.

Oregon’s K-12 and postsecondary systems do not currently have an integrated data system that allows for the transfer of student data to community colleges and public universities. A consistent student identification number or social security number was not available. Therefore, identification of the standards cohort required a matching of individual records by student name, high school, and date of birth with subsequent postsecondary enrollment records. The resulting cohort does not include all possible Oregon public high school students but was judged by the research team to provide a statistically significant group to provide valid results for this baseline year.

The total fall 2001 OUS enrollment of first-time freshmen was 10,074. Of that group, 8,171 were Oregon residents. The standards cohort for this study is 6,082 resident freshmen, who took one or more of the state assessments. Note that students in Oregon’s private high schools are not required to take state assessments and are not part of the standards cohort.

Oregon’s community colleges enrolled 40,062 first-year students (those taking at least one course). This study includes 23,297 students from the state’s community colleges for whom data on one or more of the four state assessment measures were available. Analysis of the data on these students is in process and will be reported in the later study.

## Methodology

The First Year Study is a collaborative effort conducted by the Chancellor’s Office of the Oregon University System (OUS), the Oregon Department of Education (ODE) and the Office of Community Colleges and Workforce Development (OCCWD).

Data sets were shared across the K-16 sectors. Academic standards test results were provided by the Oregon Department of Education to Institutional Research at the Oregon University System for students expected to graduate from high school in the class of 2001. Within this data set, scores in reading/literature and mathematics knowledge and skills are reported on an interval scale, ranging from a low of 150 to a high of 300, with a standard deviation of approximately 10. Standardized scores indicate how many standard deviation units above or below the mean a given score falls. Scores in writing and mathematics problem solving are reported on a composite scale of summed rater scores, ranging between 10 and 60 (writing) and between 8 and 46 (math problem solving). The OUS campuses provide a vast array of student-related data to Institutional Research on a regular basis. Data sets used in this study on first year college performance are derived from this. Comparable data sets on first year community college performance have been provided through the Office of Community Colleges and Workforce Development.

The preliminary findings that follow are based on descriptive statistics and correlations among the following sets of variables provided by both sectors:

- Oregon academic standards tests taken in grade 10 of high school, supplemented by a comparatively small number of retests taken in grades 11 and 12 (less than 5%) by students who did not meet performance standards in grade 10 (the highest score was used when multiple test scores in a single subject were available),
- Results from a college entrance admission test (SAT I or ACT) typically taken in grades 11 or 12,
- End of year high school cumulative GPA from student transcripts submitted to OUS for admission purposes,
- Performance in freshman year of college as measured by overall college GPA and GPA in various college subject areas, and
- Continued enrollment in the second year of college.

To better illustrate the relationship between 10th grade tests and overall freshman year GPA, scores on state tests were initially grouped by quintile (i.e., 1st to 20th percentile, 21st to 40th percentile, etc.), using the distribution of scores of Oregon high school students for whom freshman grades were available. These same data were then redistributed according to state defined levels of meeting, exceeding, and not yet meeting benchmarks for the purpose of further comparison of college performance levels (GPA).

In subsequent analyses, composites of academic standards tests across subject areas were created by converting the original scales to standardized variables (z-scores), summing across subject areas (e.g., reading, math and writing) and re-standardizing the sum. Pearson correlation coefficients were calculated for each pair of variables, including cases in which multiple variables were present. Preliminary findings are based on both the initial descriptive statistics provided by the quintile categories, and Pearson's correlation tables.

Performance on the state 10<sup>th</sup> grade benchmark assessment compared with college freshman academic performance measured by first year college GPA needs deeper investigation. The question needing clarification is "how likely is a student to meet acceptable levels of academic performance in their freshman year, based on incoming performance measures?"

To answer this question, the relationship between Oregon Statewide Assessment scores (OSA) and freshman GPA can be analyzed beyond the observed simple correlation coefficients. Based on Oregon state assessment scores, the probability of freshman GPA at or above 2.0, and at or above 3.0 can be estimated using logistic regression analysis. Logistic regression will be used to regress a trichotomous college GPA classification (below 2.0, 2.0 through 2.99, and 3.0 to 4.0) onto the OSA test scores. Based on the estimated test score beta coefficients, the probability of performing in any one of the three GPA classifications can be estimated. Initially, each state test score will be analyzed independently. Subsequent analyses will treat multiple state test scores in a multivariate model.

Further analysis will be considered as data trends continue to emerge and described in detail in the later report.

A broad K-16 partnership has been formed in order to bring the necessary partners together with various types of expertise in this critical area of research. The lead partners include the staff of Institutional Research for the Oregon University System, the Office of Assessment for the Oregon Department of Education and data information specialists from the Office of Community Colleges and Workforce Development. Faculty members from the University of Oregon, Portland State University, Behavioral Research and Teaching (UO), and Teaching Research (WOU) have provided consultation in research design and methodology, access and equity, student performance, large-scale assessment systems, and related areas.

## Terms Defined

### *Academic Standards Indicators*

Data on performance on state 10<sup>th</sup> grade benchmark assessments in reading, writing, math problem solving, and math knowledge and skills indicating the level at which a high school student meets the state benchmark.

### *Mathematics Knowledge and Skills Test*

Students receive a scaled score on this multiple-choice test based on the number of questions answered correctly compared to the total number of questions, taking into account the difficulty of the questions. The math knowledge and skills test measures the following Score Reporting Categories (SRC): Computations and Estimation, Measurement, Statistics and Probability, Algebraic Relationships, and Geometry.

### *Mathematics Problem Solving*

Students must meet state performance standards on both the state mathematics problem solving test and classroom work samples to meet the state problem-solving standard. The state test is an on-demand test given under standardized conditions. Students select one of three (one each from statistics and probability, algebraic relationships, and geometry) complex, multi-step problems to solve, showing their work. Each test is scored externally in five areas: conceptual understanding, processes and strategies, verification, communication, and accuracy.

Work samples provide evidence of a student's abilities to solve a variety of tasks from different strands (statistics and probability, algebraic relationships and geometry). A student may revise a work sample.

### *Predictors of College Success*

These data include overall freshman year GPA, GPA by subject area, and persistence beyond freshman year indicating that the student enrolled for fall term following the first year.

### *Reading/Literature Knowledge and Skills Test*

Students receive a scaled score on this multiple-choice test based on the number of questions answered correctly compared to the total number of questions, taking into account the difficulty of the questions. A variety of types of reading selections are included in the test. Selections reflect that reading serves three basic purposes:

- Reading for literary experience (literary selections – fiction, drama, poetry)

- Reading to gain information (information selections – articles, biographies, autobiographies; and
- Reading to perform a task (practical selections – instructions, reference materials)

### *Traditional Indicators*

Current college admission requirements for OUS include: high school GPA, high school diploma, subject area requirements. Students must also present the results of a national assessment, SAT or ACT.

### *Writing*

Students must meet state performance standards on both the state writing test and classroom work samples to meet the Certificate of Initial Mastery (CIM) writing standard. The state test is an on-demand performance test. It is not a complete portrait of a student's writing abilities. Rather, it is a snapshot of what a student can do with a particular prompt, limited time and space and without teacher or peer input. The state test is scored externally on a 1-6 scale by two raters. Each set of scores is added together to form a final composite score. Categories for scoring include conventions, ideas and content, organization, and sentence fluency.

The classroom work sample component consists of three writing samples covering a variety of modes. Students may receive feedback and use a variety of resources when completing work samples. The classroom teacher scores writing samples. Together, the state test and work samples demonstrate the breadth and depth of a student's writing abilities.

## **Preliminary Findings**

Question #1: How does the performance of incoming Oregon students on state benchmark assessments compare with their subsequent performance in college level coursework?

Preliminary Finding: Data from this study indicate a positive relationship between performance on 10<sup>th</sup> grade benchmark state assessment and performance in the first year of college. This is true for students on OUS campuses and at community colleges. (See Tables 1-6 for OUS and 7-8 for community colleges.)

- Students performing at higher levels on the state assessments at the 10<sup>th</sup> grade benchmark attain higher GPAs in college.
- Students who meet or exceed the standard at the 10<sup>th</sup> grade benchmark levels defined by the Oregon Department of Education are more likely to earn a higher GPA in related college courses than students who do not meet the standard. (See Tables 9-14) This relationship is critical because it helps to ensure persistence in college. OUS students who do not maintain a GPA of at least 2.0 face academic probation or suspension.

Question #2: What is the relationship of state assessments, high school GPA, college GPA, and the SAT to first year college performance?

Preliminary Finding: While there is no single perfect predictor of first year college success, there is a positive relationship among state assessments, high school GPA, college GPA, and the SAT. (See Table 15)

- Performance on the 10<sup>th</sup> grade benchmark assessments (reading, writing, math problem solving, and math knowledge and skills) is highly correlated with performance on the SAT I, which is typically taken 1-2 years later. This substantiates a 2001 content analysis of the Oregon 10th grade benchmark standards and assessments (eligible content) conducted by the College Board and American College Testing that indicated a strong alignment of the content of Oregon's 10<sup>th</sup> grade benchmarks with national college entry exams.
- The combined 10<sup>th</sup> grade benchmark assessments (reading, writing, math problem solving, and math knowledge and skills) and SAT I correlate with first year college GPA at approximately the same level (see Table 15). Combined state assessments correlate with first year college GPA at .375, while SAT I taken by students 1-2 years later, correlates at .381. Note that these correlations are based on 10<sup>th</sup> grade benchmark assessment data sets that include only the writing and problem solving state assessments, which are single point in time prompts. A more comprehensive picture of student performance in these areas would include locally assessed work samples.
- Currently, high school GPA demonstrates the highest correlation with first year college performance (.522) relative to either state assessments or SAT I alone. It is important to note that range of data in the current sample is restricted to only those students who meet the admission cut point requirement for various OUS campuses. Further study is needed in future years as a more comprehensive picture of high school performance is provided by data from other pending state assessment areas and further implementation of the proficiency-based admission standards system (PASS).

Question #3: What is the value of the state 10<sup>th</sup> grade benchmark assessment for predicting college success?

Preliminary Finding: No preliminary results are available at this time, but findings will be included in the more extensive report.

### **Preliminary Implications**

- The state standards and benchmark assessments are aligned at grades 3, 5, 8, and 10 with college entry (PASS) and provide information on all Oregon students in public schools. Performance on these assessments provide early benchmark indicators, occurring well before students receive SAT I results (this usually occurs late in the junior year) or reach their end-of-high-school GPA. Earlier opportunities for measuring student preparation provide critical data for more comprehensive academic advising, and ensure that a wider range of students have the opportunity to prepare for postsecondary education.

- The cohort of students in the First Year Study took state assessments in 1999-2000, without any information that these assessments might be linked to college entry. As the assessments become more closely linked to advantages when applying to college, it is likely that student motivation to reach higher standards will increase.
- The assessments in this study address 4 of the 10 (see Table 16) required standards in the Proficiency-based Admission Standards System (PASS). OUS has worked with ODE since 1994 to maintain the alignment of the K-12 standards and assessments with college entry. OUS admissions and faculty now have this baseline data to use when making admission and placement decisions.
- Each year, OUS sends an Academic Performance Report to all Oregon high schools that sent students to OUS institutions. This report describes academic preparation and first-year performance. This year's report will be the first time that OUS is able to provide information on standards met and subsequent college performance. The report will be sent to Oregon high schools on February 28, 2003.

## Reports

February 24, 2003 – Final report available (background, methodology, findings, technical notes)

February 28, 2003 – Annual OUS Academic Progress Report prepared for each Oregon high school with first year college performance

## Contacts

### Media Contacts

Oregon University System: Diane Saunders, [diane\\_saunders@ous.edu](mailto:diane_saunders@ous.edu), (503) 725-5714  
 Oregon Department of Education: Gene Evans, [gene.evans@state.or.us](mailto:gene.evans@state.or.us), (503) 378-3600, ext. 2237

### Institutional Contacts

Oregon Department of Education: Steve Slater, [steve.slater@state.or.us](mailto:steve.slater@state.or.us), (503) 378-3600, ext. 2254  
 Oregon University System: Christine Tell, [christine\\_tell@ous.edu](mailto:christine_tell@ous.edu), (541) 346-5714  
 Mark Endsley, [endsley@ipns.com](mailto:endsley@ipns.com), (503) 920-5257

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