

Research Report No. 09-5

**Washington State Board for Community and
Technical Colleges**

ROLE OF PRE-COLLEGE (DEVELOPMENTAL AND REMEDIAL) EDUCATION FOR RECENT HIGH SCHOOL GRADUATES ATTENDING WASHINGTON COMMUNITY AND TECHNICAL COLLEGES

SYSTEM SUMMARY FOR STUDENTS ENROLLED IN 2008-09

December 2009

Key Findings

- Fifty-four (54) percent of community and technical college students who graduated from high school in 2008 took pre-college (also known as remedial) classes in 2007-08. These students – totaling 13,328 – enrolled in pre-college math, English or reading.
- Forty-eight (48) percent of community and technical college students who graduated from high school in 2008 took pre-college math courses, up two percent from 2007.
- Twenty-nine (29) percent of 2008 high school graduates enrolled in the community and technical colleges in 2008-09 took no math or other quantitative reasoning courses during their first year of college and had no record of previously completing the math required for an associate degree. Colleges are implementing strategies to ensure that more students take math early in their time at college.
- Within three years of high school graduation, about half (45 percent) of all high school graduates have enrolled at a community or technical college in Washington. More than a third (35 percent) of high school graduates enroll immediately in community and technical colleges, and an additional 10 percent enroll within one or two years after high school graduation.

This report provides system-level summary highlights of pre-college course-taking behavior of high school graduates who attended a community or technical college in the year following graduation, and of those who delayed enrollment at the college for one or two years after high school graduation. The report contains information on these enrollment trends as required by RCW 28B.10.685. The report also describes the expenditures for pre-college courses.



For Information Contact:
Deborah Stephens, Research Manager, Research and Analysis
Phone: 360-704-1014, Email: dstephens@sbctc.edu
Washington State Board for Community and Technical Colleges
TDD 800-833-6388

College-Going Pattern of High School Graduates

Thirty-seven (37) percent of Washington's new high school graduates enrolled at community or technical colleges in the year following high school¹. About another 5 percent enter a community or technical college after waiting a year or two and another 5 percent reverse the transfer pattern by first attending a four-year or out-of-state college and then transfer to a community or technical college within a year or two of high school graduation.

Public and Private High School Graduates Going Straight to Community and Technical Colleges*

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|--------|--------|--------|--------|--------|
| Statewide Graduates | | | | | |
| Public & Private High Schools | 65,417 | 65,408 | 64,673 | 67,137 | 66,259 |
| Statewide Graduates Enrolled in CTCs | 24,131 | 23,724 | 24,127 | 23,561 | 24,792 |
| % of Statewide Graduates Enrolled in CTCs | 37% | 36% | 37% | 35% | 37% |

* Most enter in summer or fall after high school

Statewide Trends in Pre-College Course Taking of Students who Enroll in Community and Technical Colleges Directly out of High School

The percentage of recent high school graduates taking pre-college courses has grown slightly in the most recent year, primarily because of an increase in the percentage of students taking pre-college math.

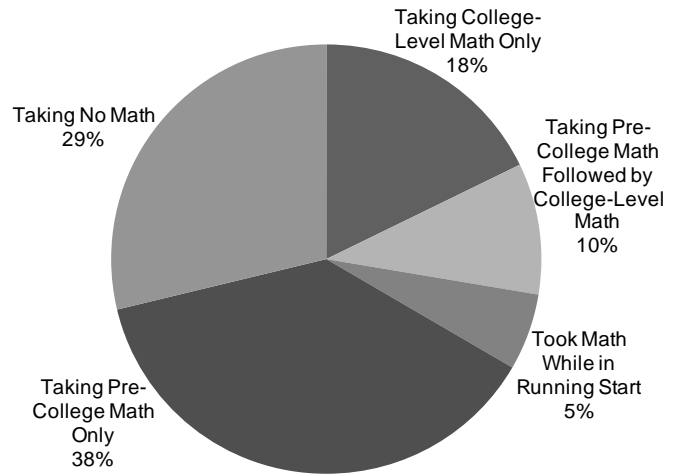
Pre-College Course Enrollments by CTC Students Attending Immediately After High School

| | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 |
|-------------------------------|---------|---------|---------|---------|---------|
| Pre-College Math | 11,439 | 10,855 | 10,970 | 11,071 | 11,830 |
| % Taking Pre-College Math | 47% | 46% | 45% | 46% | 48% |
| Pre-College Writing | 4,471 | 4,083 | 3,964 | 4,075 | 4,372 |
| % Taking Pre-College Writing | 19% | 17% | 16% | 17% | 18% |
| Pre-College Reading | 2,561 | 2,254 | 2,353 | 2,336 | 2,415 |
| % Taking Pre-College Reading | 11% | 10% | 10% | 10% | 10% |
| Any Pre-College Course | 13,098 | 12,328 | 12,468 | 12,486 | 13,328 |
| % Taking Any Pre-College | 54% | 52% | 52% | 53% | 54% |

¹ Students are classified as recent high school graduates by both self identification and a data probability match to the most recent graduating class of high school students. The probability match is needed because students who participate in high school and college dual enrollment programs do not always change their graduation status when returning as a college student. Beginning in 2008-09, the source of secondary data became more reliable as new technologies were obtained. Reports done prior to that year may have slightly over-counted the number of graduates enrolled.

Math Enrollment in First Year of College: Most certificate programs and all associate degrees require completion of a college-level math or quantitative reasoning course. Researchers find that students are most likely to complete their college program if they successfully complete either the highest level of pre-college math or a college-level math course during their first year of college. More than one quarter (29 percent) of 2008 high school graduates took no math of any kind in their first year of college.

High School Graduates by Math Choices in First Year at CTC



Fall Pre-College Course Taking Pattern by Race/Ethnicity

| | 2006 | | | 2007-08 | | | 2008-09 | | |
|--------------------------------|----------|------------------------|-------------------------|----------|------------------------|-------------------------|----------|------------------------|-------------------------|
| | Enrolled | Taking Any Pre-College | Taking Pre-College Math | Enrolled | Taking Any Pre-College | Taking Pre-College Math | Enrolled | Taking Any Pre-College | Taking Pre-College Math |
| Asian/ Pacific Islander | 1,873 | 943 | 761 | 1,900 | 918 | 707 | 1,926 | 901 | 690 |
| <i>Percent*</i> | 10.5% | 50.3% | 40.6% | 10.7% | 48.3% | 37.2% | 10.3% | 46.8% | 35.8% |
| African American | 839 | 443 | 360 | 897 | 500 | 396 | 875 | 472 | 374 |
| <i>Percent</i> | 4.7% | 52.8% | 42.9% | 5.0% | 55.7% | 44.1% | 4.7% | 53.9% | 42.7% |
| Native American | 473 | 239 | 195 | 441 | 227 | 194 | 496 | 249 | 199 |
| <i>Percent</i> | 2.7% | 50.5% | 41.2% | 2.5% | 51.5% | 44.0% | 2.6% | 50.2% | 40.1% |
| Hispanic | 1,601 | 879 | 690 | 1,699 | 968 | 741 | 1,959 | 1,172 | 937 |
| <i>Percent</i> | 9.0% | 54.9% | 43.1% | 9.5% | 57.0% | 43.6% | 10.4% | 59.8% | 47.8% |
| Other | 295 | 142 | 106 | 304 | 152 | 115 | 305 | 140 | 113 |
| <i>Percent</i> | 1.7% | 48.1% | 35.9% | 1.7% | 50.0% | 45.2% | 1.6% | 45.9% | 37.0% |
| White | 13,438 | 6,012 | 5,119 | 13,268 | 5,998 | 5,146 | 14,030 | 6,186 | 5,313 |
| <i>Percent</i> | 75.4% | 44.7% | 38.1% | 74.6% | 45.2% | 38.8% | 74.7% | 44.1% | 37.9% |

*For "Enrolled", percent represents percent of total students enrolled, for others, percent represents percent of ethnicity taking pre-college (either any or math).

Variation by Demographic Characteristics: Female and students of color high school graduates are more likely than males and whites to enroll in pre-college courses. Over time, a smaller percentage of Asian and white students are taking pre-college courses, including math. A higher percentage of Hispanic students are taking pre-college courses.

Pre-College Course Taking by Gender

Fall 2008

| | Females | Males |
|---|----------------|--------------|
| Enrolled | 10,142 | 9,383 |
| % of Total Enrolled | 52% | 48% |
| Taking Any Pre-College | 6,142 | 5,048 |
| % of Enrolled Taking Any Pre-College | 61% | 54% |
| Taking Pre-College Math | 4,189 | 3,434 |
| % of Enrolled Taking Any Pre-College Math | 41% | 37% |

College-to-College Variation: Fifty-two (52) percent of 2008 high school graduates enrolled at the community and technical colleges took one or more pre-college courses in their first year of attendance. The rate of pre-college course taking at community colleges ranges from a low of 38 percent at Pierce College, Fort Steilacoom, to 71 percent at Tacoma Community College. Several technical colleges have a lower rate, reflecting the small percentage of high school graduates attending and the nature of the technical programs taken by those high school graduates.

Number of 2008 High School Graduates Attending College

Number and Percent Enrolled in Pre-College Courses

2008-09

| College | Public and Private High School Graduates Enrolled | Taking at Least 1 Pre-College Course | % in Pre-College Courses | Taking Pre-College Math | % Taking Pre-College Math |
|------------------------|--|---|---------------------------------|--------------------------------|----------------------------------|
| Bates | 225 | 57 | 25% | 48 | 21% |
| Bellevue | 2,073 | 869 | 42% | 670 | 32% |
| Bellingham | 221 | 60 | 27% | 49 | 22% |
| Big Bend | 355 | 236 | 66% | 219 | 62% |
| Cascadia | 614 | 324 | 53% | 322 | 52% |
| Centralia | 454 | 190 | 42% | 182 | 40% |
| Clark | 1,764 | 999 | 57% | 905 | 51% |
| Clover Park | 323 | 150 | 46% | 141 | 44% |
| Columbia Basin | 1,145 | 701 | 61% | 636 | 56% |
| Edmonds | 1,039 | 625 | 60% | 596 | 57% |
| Everett | 1,140 | 682 | 60% | 555 | 49% |
| Grays Harbor | 342 | 240 | 70% | 188 | 55% |
| Green River | 1,355 | 678 | 50% | 641 | 47% |
| Highline | 951 | 429 | 45% | 370 | 39% |
| Lake Washington | 194 | 107 | 55% | 105 | 54% |
| Lower Columbia | 464 | 249 | 54% | 220 | 47% |
| Olympic | 1,080 | 641 | 59% | 597 | 55% |
| Peninsula | 292 | 154 | 53% | 145 | 50% |
| Pierce Fort Steilacoom | 844 | 319 | 38% | 254 | 30% |
| Pierce Puyallup | 812 | 388 | 48% | 331 | 41% |
| Renton | 215 | 21 | 10% | 21 | 10% |
| Seattle Central | 612 | 262 | 43% | 240 | 39% |
| Seattle North | 305 | 124 | 41% | 106 | 35% |
| Seattle South | 391 | 174 | 45% | 159 | 41% |
| Seattle Voc Institute | 24 | | na | | na |
| Shoreline | 772 | 345 | 45% | 323 | 42% |
| Skagit Valley | 724 | 423 | 58% | 388 | 54% |
| South Puget Sound | 1,009 | 554 | 55% | 508 | 50% |
| Spokane | 813 | 423 | 52% | 382 | 47% |
| Spokane Falls | 1,434 | 784 | 55% | 702 | 49% |
| Tacoma | 915 | 650 | 71% | 515 | 56% |
| Walla Walla | 399 | 178 | 45% | 167 | 42% |
| Wenatchee Valley | 594 | 371 | 62% | 329 | 55% |
| Whatcom | 837 | 516 | 62% | 498 | 59% |
| Yakima Valley | 791 | 515 | 65% | 403 | 51% |
| System Total* | 24,792 | 13,328 | 54% | 11,830 | 48% |

*Each student counted only once even though they may have enrolled at two or more colleges during the year.

Pre-College Math: Students entering college with skills below the college-readiness level must take pre-college math courses before starting on their required math sequence in college. The number of recent high school students taking pre-college math is high – 11,830 students in 2008-09. Major efforts are currently underway to ensure that students who graduate from high school are better prepared and ready for college math, and to ensure that students who do take pre-college math will go on to successfully complete college-level math courses.

Six of Washington’s colleges are currently participating in the Achieving the Dream initiative to help more community college students succeed, particularly among student groups that traditionally have faced significant barriers to success. One of the goals of the initiative is to help these students advance from remedial to credit-bearing courses. Additional information can be found at <http://www.achievingthedream.org>.

The Gates Foundation provided grant funding to Washington’s community and technical college system to develop and support a coalition of colleges willing to commit to improving student math achievement by making substantive changes in core educational practices and teacher beliefs and behaviors in their pre-college math programs. The effort builds on and extends the successes of lessons learned from the [Transition Math Project \(TMP\)](#), shifting the focus of the intervention from high schools to the pre-college math programs in Washington’s community and technical colleges. Information about the TMP can be found at <http://www.transitionmathproject.org>.

The Transition Math Project, started in 2004, is a joint effort of K-16 leaders to define college-readiness standards in math and to align curriculum, instruction, and assessment more effectively so that more students leaving high school will be prepared for college-level work in math. These standards for math at community and technical colleges and baccalaureate institutions (<http://www.transitionmathproject.org/standards.asp>) clarify the foundation of math knowledge and skills students need to be successful in entry-level college math courses.

Through sixteen cross-sector partnerships in regions all around Washington, the Transition Mathematics Project is developing model products and promising practices to help high school students gain the knowledge and skills needed for college math – to meet the College Readiness Standards. One such effort, Project TIME, in South King County has developed a new Senior Math Course (<http://www.instruction.greenriver.edu/projecttime/>). Other projects are focused on developing models for math teacher professional development, integrating the standards with applied math in career technical education contexts, and public outreach to students and parents about the importance of math preparation for students’ next steps beyond high school.

Current College Readiness Standards are above the statewide minimum math requirements for high school graduation in Washington State. Providing greater clarity to teachers, students, and parents about these expectations can address the long-term goals of the Transition Math Project to increase students’ math course-taking in high school and reduce the level of pre-college course-taking once in college. Part of the effort to provide more clarity involves the development of a new College Readiness Math Test based on the standards. This test provides a clear and consistent performance target for math college readiness across the state.

Pre-college courses do not apply to the student’s degree credits and may extend the time needed to earn a college degree. College students have different college-level math sequences depending on their future major. The following are examples of these different choices:

| | | | | |
|---------------------------|--|---|---------------------------|---------------------|
| College plans | Transfer to Business Major | Transfer to Elementary Education Major | Transfer to Engineering | Transfer to Nursing |
| 1 st year math | Finite math, Calculus for Business, Statistics | 2-3 course math series designed for educators | Pre-calculus and calculus | Statistics |

While pre-college course-taking extends the time and cost of college, most students who take pre-college math courses do achieve their academic goals. They successfully complete the pre-college courses and move on to complete their degrees or certificates. A study of recent baccalaureate graduates found that 48 percent of those who started at the community and technical colleges straight from high school had taken a pre-college course, most often math. Those students graduated at high rates in all major fields, and with senior-year GPAs comparable to students who did not take pre-college courses, and to students who started at the university (2.95 for younger college transfers with pre-college courses, 3.03 for younger transfers without pre-college courses, and 2.98 for direct-entry students). The latest report suggests that among community and technical college transfers to four-year institutions, 62 percent started at a remedial level and progressed to college level courses and a baccalaureate degree. Large numbers of college students transfer in all majors, including majors that rely on strong math skills such as STEM (35 percent) and business (50 percent)².

High school graduates enrolled with a transfer goal were more likely than those enrolled for workforce purposes to take pre-college math. Nearly two-thirds (66 percent) of the class of 2008 enrolled in the CTC system had a transfer goal. That group accounted for 71 percent of the high school graduates enrolled in pre-college math classes. The percentage of recent high school graduates with a workforce goal taking pre-college math increased substantially in 2008-09 as a result of increasing math expectations for workforce programs.

Pre-College Course Enrollments by Purpose for Attending their CTC

| | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 |
|---------------------------|---------|---------|---------|---------|---------|
| Transfer goal* | 17,302 | 16,694 | 16,716 | 17,204 | 18,361 |
| Pre College Math | 8,795 | 8,225 | 8,354 | 8,679 | 9,101 |
| % Taking Pre-College Math | 51% | 49% | 50% | 50% | 50% |
| Workforce goal* | 9,408 | 9,225 | 9,074 | 9,084 | 9,459 |
| Pre College Math | 3,443 | 3,338 | 3,214 | 3,177 | 3,650 |
| % Taking Pre-College Math | 37% | 36% | 35% | 35% | 39% |

* Graduates may be enrolled for both a workforce and transfer goal in the same year.

Pre-College Writing and Reading: Statewide, 18 percent of recent high school graduates take pre-college writing and 10 percent take pre-college reading at a community or technical college

² Stern, Paul, Pitman, Kirby and Pavelchek, Dave. *The Role of Transfer in the Attainment of Bachelor's Degrees at Washington Public Baccalaureate Institutions, Class of 2006*. Washington State University, Social & Economic Sciences Research Center-Puget Sound Division, June 2009.

before taking college-level English courses. Teachers in K-12 and faculty at colleges and universities are in the process of finalizing college-readiness standards related to English writing and reading. Draft standards are available at: <http://www.learningconnections.org/clc/hecb.htm>.

Statewide Trends in Pre-College Course Taking of Students Who Delayed Entering College for One or Two Years After High School

RCW 28B.10.685 requires the State Board to report on the course-taking pattern for high school graduates from the past three years. While many high school students attend community or technical colleges in the year immediately after high school, others start initially at a university and enter a community college a year or two after high school (reverse transfer). A smaller number of high school graduates do not start at a university but wait one to two years to attend college.

As shown in the table below, these students who attend community and technical colleges with a delay of one or two years after high school graduation are less likely to enroll in a pre-college course. The majority of those who do take pre-college courses take math. The students who delay coming to college and who have no prior postsecondary education (either at a two-year or four-year institution) enroll in pre-college courses in patterns very similar to students who come directly out of high school as seen on page 7.

In 2008-09, twenty three (23) percent of students who entered college after a delay following high school and who had no prior post-secondary education were enrolled to prepare for transfer. More than half (52%) of the students in this group took at least one pre-college course.

Nineteen (19) percent of students who entered college after a delay following high school and who had no prior post-secondary education were enrolled to obtain workforce degrees and certificates. In 2008-09, thirty-seven (37) percent of these students enrolled in at least one pre-college course.

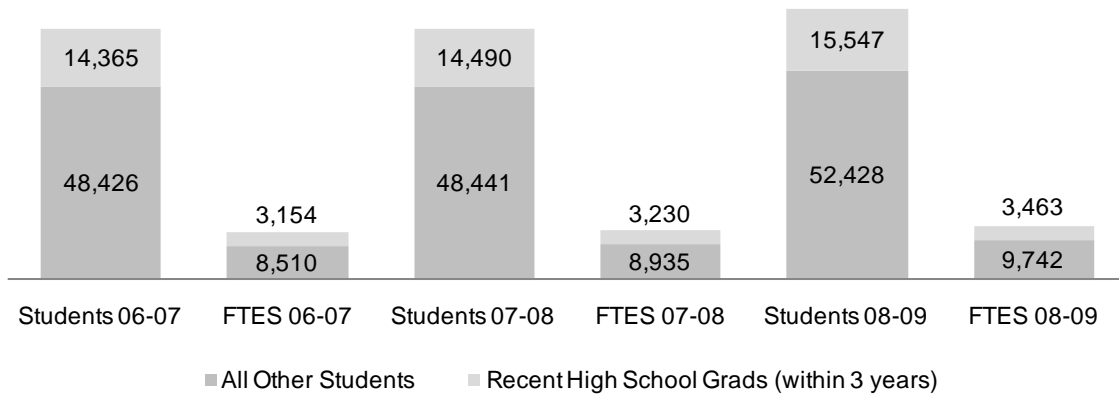
Statewide Trends in Pre-College Course Taking for Students Who Delayed Enrollment at CTCs for 1 or 2 Years after High School

| | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 |
|----------------------------------|----------------|----------------|----------------|----------------|----------------|
| 1 or 2 Years Later to CTC | 5,965 | 6,234 | 6,559 | 6,854 | 7,553 |
| % of Prior Year Graduates | 9% | 10% | 10% | 10% | 11% |
| Took Pre-College Math | 1,515 | 1,586 | 1,671 | 1,730 | 1,893 |
| % Taking Pre-College Math | 25% | 25% | 25% | 25% | 25% |
| Took Pre-College Writing | 517 | 536 | 467 | 552 | 598 |
| % Taking Pre-College Writing | 9% | 9% | 7% | 8% | 8% |
| Took Pre-College Reading | 320 | 283 | 267 | 297 | 346 |
| % Taking Pre-College Reading | 5% | 5% | 4% | 4% | 5% |
| Any Pre-College Course | 1,766 | 1,832 | 1,897 | 1,987 | 2,219 |
| % Taking Any Pre-College | 30% | 29% | 29% | 29% | 29% |

Expenses for Pre-College Course Taking

Total Pre-College Course Taking and Recent High School Graduates: Most of the students in pre-college courses (77 percent) are older students who have been out of high school for at least three years before enrolling in their pre-college class. When taking pre-college courses, older students take slightly fewer courses over the year than recent high school graduates such that older students account for 74 percent of the total pre-college FTE.

**Students and FTES in pre-College Courses By Recent High School
and All Other 2006-07 to 2008-09**



Expenditures Related to Pre-College Course Taking: In 2008-09 colleges spent on average \$4,890 per FTE for pre-college courses. Thus the expenditure for recent high school graduates (those attending directly after high school or within three of years of graduation) in pre-college courses was \$17.2 million (3,463 FTE at \$4,890 per FTE). The cost for all pre-college course work was \$65.8 million. The funding for these expenditures comes from the state general fund plus the same tuition per course paid by students as they pay for college-level courses.