

SUPPORTING DEVELOPMENTAL EDUCATION REFORM

Washington Works to Increase Student Success



SeattleJobs
Initiative

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M. COLLEEN CLANCY

Seattle Jobs Initiative is a nonprofit organization that creates opportunities for people to support themselves and their families through living-wage careers. Its policy work supports institutional changes that improve access to training and services for low-income individuals. Through partnerships and innovative approaches, SJI helps people chart a path to economic self-sufficiency. For more information, visit www.seattlejobsinitiative.com.

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Educating the Under-Prepared Student

Education and training have long been pathways out of poverty but, in recent years, the shifting economy has raised the bar on the level needed for a stable, living-wage job. Research indicates that 77% of all *family-supporting* jobs will require some form of college education by 2014ⁱ and that, by 2018, nearly two-thirds of *all* jobs in Washington State will require postsecondary education.ⁱⁱ Difficult labor market conditions in the wake of the recent recession have only highlighted the importance of a college credential, as those without one have faced significantly higher rates of unemployment and significantly lower wages.ⁱⁱⁱ

In today's economy, the workforce strategies of short-term education and training have to be integrated with new strategies that help individuals earn long-term certificates and degrees that prepare them for the jobs of the future. More than ever before, workforce organizations are turning to community and technical colleges as key partners in these new strategies. Increased reliance on the colleges has sharpened the interest of workforce agencies in understanding more about how the community and technical college system works, and their awareness of the difficult hurdles that students face on the road to earning a credential. For too many students, developmental education is among the highest of these hurdles.

The term "developmental education" masks a serious problem in the state as well the nation – the number of students who enter college academically unprepared to succeed. To address this deficiency, community colleges assign students to developmental^{iv} coursework to raise their reading, writing and math skills. In 2008–2009, 54% of the students who entered Washington community and technical colleges directly from high school took developmental courses, and it is certain that even more tested below college level but didn't enroll in the classes.^v The percentage of older adults who are unprepared to tackle college coursework is estimated to be even higher. In that same year, adults who had been out of high school for at least three years made up 77% (52,428) of the total number of Washington students enrolled in developmental classes.^{vi}

These developmental education programs can add a year or more to the time it takes to earn a degree. Although the classes can often be taken concurrently with college-level

coursework, in a number of professional/technical programs students must improve their math and English skills *before* they can begin their program studies. The credits students earn in developmental coursework count against their maximum financial aid award but not toward a certificate or degree.

National research paints a grim picture for the student referred to developmental education. Students facing a lengthy stay can count on increased costs, lost earnings, prolonged stress and demoralization. Studies indicate that few students referred to developmental education go on to earn a college credential. In a recent review of more than 250,000 students three years after they entered college, 80% of those assigned to math remediation and 63% of those assigned to reading remediation had not gone on to complete the college-level math and English courses required for their degree. Completion rates were worse for students with the weakest academic skills – fewer than 10% of the students assigned to low-level math, and 24% of those assigned to low-level reading passed a college-level course in these subjects within 3 years of college entry.^{vii}

In the face of this research, colleges in Washington and across the country are devoting effort and resources to improving developmental education outcomes; however, it is not yet clear which strategies will be effective to reverse this low rate of success.^{viii} Increasingly, educators question whether the tests that colleges use to assess academic skills and place a student in developmental education accurately predict the student's chances of succeeding in college-level work.^{ix} Even the premise of developmental education has been questioned as data emerge that suggest that students who bypass developmental education may have better odds of earning a credential than those who enroll in it.^x And yet, almost everyone agrees that low-skilled adults need an opportunity to gain academic skills, and that community colleges are best situated to provide it. The question is: How?

As this brief is written, the Washington State Board for Community and Technical Colleges (SBCTC) is coordinating a statewide effort to reform the delivery of developmental education to the students in its colleges. The effort to build an effective and cohesive system to prepare students for college is one of the critical tasks the colleges face to make educational opportunities a reality for low-skilled, low-income adults. However, the community colleges cannot undertake this effort alone. Four-year colleges, K-12 institutions, legislators and workforce organizations all have a stake in the effort and a role to play in the process of providing adult learners with access to high quality, effective education.

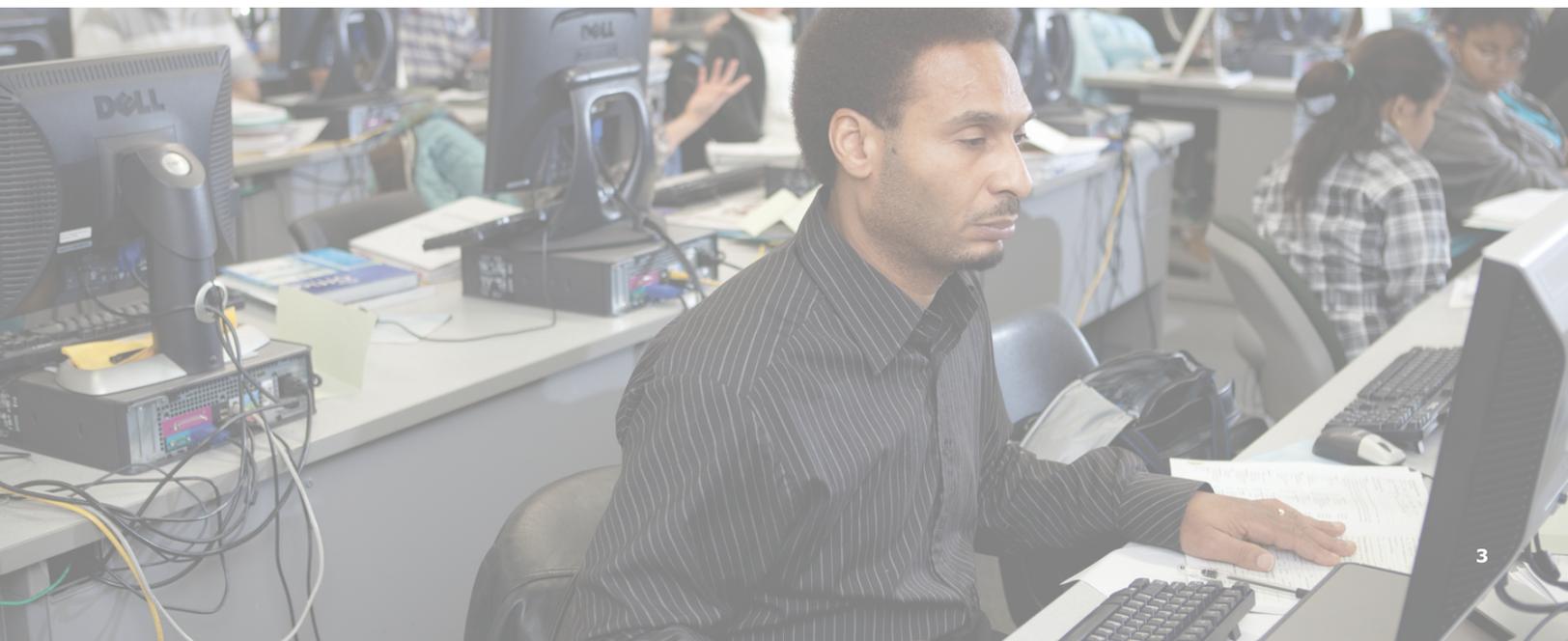
Among the many voices seeking a solution to the problem of remediation, one key voice – the student's – is missing. If students could speak as consumers, their likely message would be "we need programs that lead us to our goals, while they conserve our time and our money." For, while developmental education is costly for all of us, students pay the highest price. As one community college professional put it, "It's like starting college in debt."

The Importance of Washington Community and Technical Colleges

Washington community and technical colleges are a key educational resource for all Washington State residents. The community and technical college system enrolls the majority of higher education students in the state – more than 63% by recent reports^{xi} – and the sheer number of enrollments is impressive. In 2009–2010, Washington community and technical colleges enrolled 469,907 students, an increase of 5% (17% of full-time equivalents) since 2008, when the effects of the recession began to send unemployed workers back to school.^{xii} Within three years of high school graduation, close to half of all Washington graduates have enrolled at a community or technical college, and many more will return later.^{xiii}

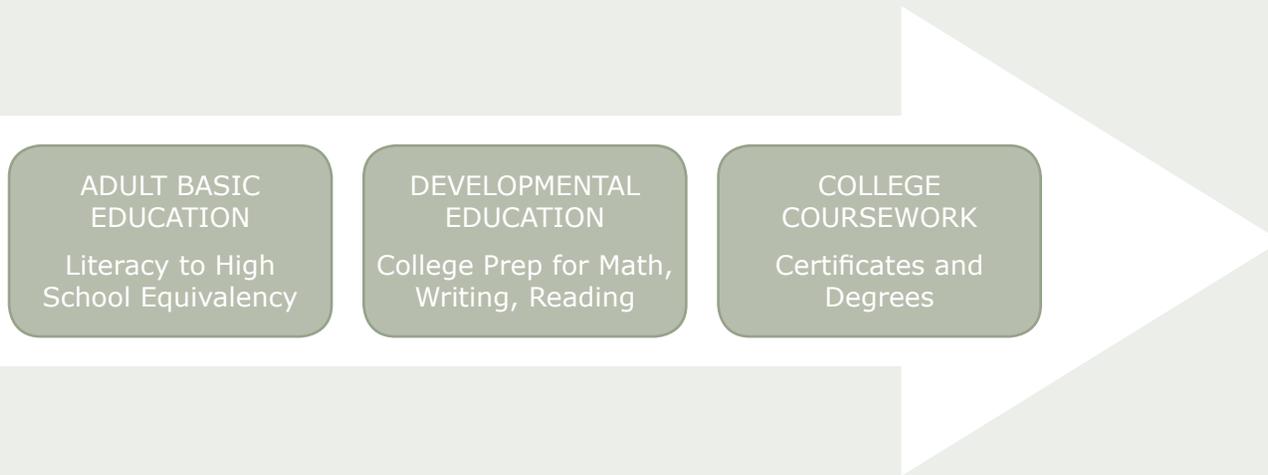
Some of these recent high school graduates, and many more of the adults who delay their entry into college, will enroll in professional/technical programs to gain job skills. In 2009–2010, 46% (154,213) of the state-supported community and technical college enrollments were for a work-related purpose, in contrast to the 34% (113,000) who were enrolled for transfer to a 4-year college.^{xiv} Many of these students will have marginal incomes. Of those students enrolled in aid-eligible programs in 2009–2010, 43% received need-based financial aid and that figure exceeded 65% at some of the colleges in the state. And, while this figure captures some of the low-income students, many more of them attend college but do not take aid-eligible coursework.^{xv}

Like all public institutions in the current economy, community colleges have taken a hit in state budget appropriations over the past two years – state support to the colleges has dropped 15% during the biennium. This drop in funding, together with the increase in enrollments during the same time frame, means that the system served the equivalent of 21,669 more full-time students in 2009–2010 than were paid for by the state.^{xvi} As out-of-work individuals seeking retraining flood the colleges, the colleges are asked to do more, with less.



Developmental Education in Washington State

In Washington State community and technical colleges, developmental education is the midpoint of a continuum that begins at adult basic education and extends through college-level coursework. Although the relationship between these programs is complex and at times overlapping, each type of program has a role to play in the development of academic skills in math, reading and writing. The graphic below shows the basic structure.



In the period leading up to the current statewide initiative to reform developmental education, Washington has become a national leader in innovation to increase student success. Among the many efforts the colleges are making, some key initiatives directly affect pre-college education:

- In 2007, the state introduced the “Student Achievement Initiative” which rewards colleges for improving their pre-college and college progression and completion rates. Under this initiative, each college earns achievements points (and financial performance rewards) for improving on its own prior-year performance.
- The state has been widely recognized for the development of the Integrated Basic Education Skills Training (I-BEST) model, through which students learn basic skills in the context of earning college credits toward a professional/technical certificate. All colleges in the state have at least one I-BEST program and ten colleges are currently working on projects to extend this strategy into developmental education.
- Washington is a participant in the nationwide *Achieving the Dream* effort that works to increase student success through broad institutional change, reinforced by student achievement data. The five Washington colleges in the early stages of the *Achieving the Dream* project have recently been joined by ten additional colleges to form one of *Achieving the Dream’s* largest state cohorts.
- In “Rethinking Pre-College Math,” seven state colleges are working on projects to create math programs and instructional practices that improve pre-college math outcomes.

Much of the innovative work described above has been funded by foundations and has thus far reached only a small portion of the college population. Even the I-BEST program, which is a relatively established innovation, still serves fewer than 5% of the state-supported basic education students (3,201 of 65,930 students).^{xvii} As the fruits of these innovative efforts emerge, one challenge the system will face will be how to incorporate the new learning into statewide programs that reach large numbers of students.

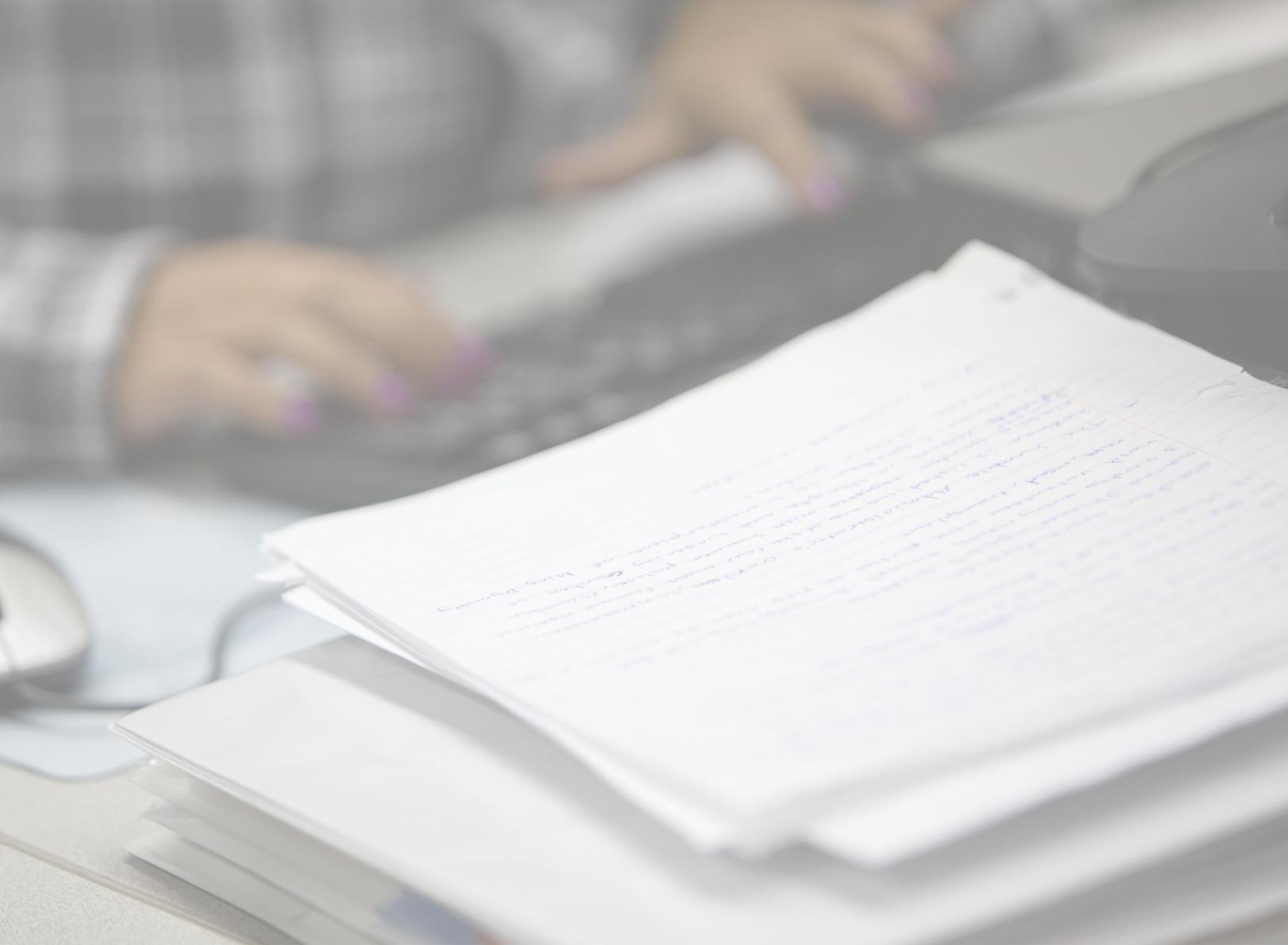
As developmental education is currently practiced in Washington, each college selects its own placement policy, curriculum and instruction and each college collects and analyzes its own data on student outcomes. This practice has led to wide variations in program practices and, as a consequence, wide variations in the length of time students may spend in developmental education. In Washington, as in all states working to reform pre-college education, the work of transition is expected to move the system from one in which the colleges have relative autonomy to one in which the colleges coordinate their efforts.

Working With a Developmental Education System in Transition

As the state moves toward this more coordinated approach, the developmental education programs in the different colleges are expected to continue to reflect the heterogeneity of a system in transition. It is unlikely that reform efforts will result in an immediate change in this variability – innovation will have to continue through the transitional period because no one knows, at this point, which practices will, in the words of *Achieving the Dream*, “move the needle on student success.”^{xviii} As new practices emerge, and data that demonstrate their effectiveness are made available, the colleges, their students and outside organizations working with the colleges will develop a better understanding of the different options that are available and what they mean to student success.

In the meantime, the efforts of Washington workforce organizations will also be those of a system in transition. At the same time that the colleges are working to improve student achievement, the workforce organizations are themselves involved in an innovative effort to add college completion to the workforce tool box. To develop effective strategies that help low-income individuals earn college credentials, these workforce organizations will need to have a thorough understanding of the college programs that their students might enter, and clear data on student completion and job attainment.

Until the state develops public resources that provide this data, workforce organizations will have to develop their own resources to find out how pre-college programs are



structured, and what that structure may mean to a student's educational outcomes. The more significant variables in programs currently offered in the colleges, and their potential impact on students, are outlined below.^{xix}

WHAT ASSESSMENT LOOKS LIKE NOW

One of a student's first steps on entering a community college is to take a placement test to assess his or her skills in reading, writing and math. Today, most Washington colleges use the multiple choice COMPASS or ACCUPLACER tests for placement into certificate and degree programs. The score the student achieves on this placement test, which the student may not have heard of or prepared for, can have a considerable impact on his or her chance of completing a college credential.

This impact varies from college to college. Each college develops a placement matrix based upon its own assessment policy and/or performance data from past cohorts of students in the college's own program. As a consequence, placement cut-off scores for the same course can vary by as many as

40 points (out of a total of 100) from one college to another.

IMPACT: A student at one college places into pre-college arithmetic and faces up to five quarters of developmental math. A student with the same test score at another college places into algebra and faces only two quarters.

HOW COURSE SEQUENCES AFFECT THE STUDENT'S PROGRAM

Developmental education bridges the gap between very low and college-level skills by breaking instruction into a sequence of courses. Each course in the sequence is termed a "level," and each level spans a quarter of instruction. Depending upon the college:

- Math developmental sequences may contain from three to five levels of 5 credits each.^{xx}

IMPACT: Many students facing multiple levels of math remediation never enroll in college and few of those who do graduate. A disproportionate number of these students are people of color and/or economically disadvantaged.^{xxi}

- Reading and writing sequences may have from two to four levels and the credits for each level can vary from 3 to 12.

IMPACT: A student at one college may complete the entire developmental English sequence in 2 quarters and 110 hours of class time. The same student at another college may face up to 4 quarters and more than 300 class hours.

At many colleges, the full course sequence may start with a referral to basic education. Colleges vary considerably in fixing the transition point between basic and developmental education. Some colleges direct all students who intend to take college-level courses to the developmental education program. Other schools have a minimum cut-off score to begin developmental coursework and refer students who do not achieve this score to basic education.

IMPACT: The low-skilled student's stay in basic education may well be indefinite. Students in basic education take a different placement test (CASAS) and the program itself (which is federally regulated) is not ordinarily coordinated with the developmental education program.

HOW ACCELERATORS CAN HELP

A number of other variables can affect the length of time a student spends in developmental education, and the occurrence and application of these factors also vary from college to college. One college restricts students from retaking the placement test for a period of 90 days, while another allows unlimited retakes. Formal and informal waivers of test scores are common and unevenly applied. Some colleges have instructional strategies to speed up the developmental sequences but access to these options is often restricted to higher-performing students.

IMPACT: Savvy students with good self-advocacy skills may mitigate the impact of their placement score by retesting, getting a waiver or accelerating their coursework, while less confident and lower-skilled students may be unaware of or unable to benefit from these options.

The Impact of Developmental Education on the Professional/Technical Student

Much of the developmental education conversation focuses on its role in preparing students to transfer to four-year colleges; however, pre-college coursework plays a significant role in the professional/technical arena as well. Recent research demonstrates how developmental education requirements can affect professional/technical students and how this impact varies, depending on the college the student attends.^{xxii}

The differing ways in which pre-college math and English instruction are incorporated into professional/technical programming is particularly challenging for workforce organizations that refer clients to more than one college. In this situation, the workforce professional – often a case manager or education navigator – becomes a proxy for the student-consumer, looking at different programs and trying to assess what the variations may mean to the client’s chances of completing a credential and gaining meaningful employment. Because data on the completion and job attainment rates at the different colleges are not generally available, these professionals, and their clients, do not have information that is critical to the client’s choice of college.

IMPACT: An education navigator and a client working together to identify accounting programs may find that a number of different programs are offered in the region, but they will not find information that clearly explains the differences between those programs or what those differences may mean to the client’s chances of completing a credential and getting a job.

The differences between programs in the same system exist because of the way the programs are designed. The technical faculty at each college develops its curriculum with input from a local advisory committee, and within broad accreditation standards and generalized requirements for SBCTC approval. This leaves the departments with wide discretion to design program content and designate academic skill levels. As a result, similarly intended programs at the different colleges can vary considerably.^{xxiii}

The majority of professional/technical departments look to their college developmental education programs to span the gap between the students' math and English skills at enrollment and the skill levels they will need to enter the workforce in their chosen professions. However, few developmental education programs are aligned with job skills; instead, they provide a generalized curriculum to lead students to "college-level" skills.

The term "college-level" has different meanings in different contexts, for example:

- Eligible to take math and language courses that transfer to a four-year school;
- Eligible to take program-level courses numbered above 100; or, simply,
- Able to read a college textbook and write a college term paper.

Depending upon the professional/technical program, and upon the college, pre-college education to reach these levels can range from none, to four or five course sequences. These requirements affect professional/technical students at two important points in their education, program entry and program completion:

QUALIFICATION SCORES FOR PROFESSIONAL / TECHNICAL PROGRAM ENTRY

In Washington, the use of assessment placement scores to qualify students to enter professional/technical programs is common. The actual scores that determine eligibility to enter into similar programs vary from college to college. For entry into the five Seattle area accounting programs, for example, qualification scores vary from none to college-level for reading and writing and from none to level two for math. Depending upon the school, a low-skilled student could face a year or more of preparation to enter a program.

IMPACT: Few of these students know that they could start their program immediately at another college and gain academic and job skills at the same time. There is a need for student resources that provide this information.

SKILL LEVELS FOR PROFESSIONAL/TECHNICAL PROGRAM COMPLETION

The math and English levels required to complete a professional/technical certificate or degree vary even more than those required for entry. This variation is particularly difficult to understand because exit standards are assumed to be set to coincide with the job skills needed for employment.

Again, looking at accounting skill levels among Seattle area colleges, the courses required to complete a program (and the number of quarters of pre-college education to qualify for those courses) vary from basic business math (no pre-college education required) to Economics 201 (potential 5-quarter sequence required).^{xxiv} Similarly, English adds no pre-college coursework at one college (because it is embedded in the program) while it adds up to four quarters of study at others (because transfer level skills are required). The potential effect of this variation on the student seeking a credential is considerable.

IMPACT: At one college, a very low-skilled student might have to earn as many as 140 developmental and program credits to obtain a degree. At a neighboring college, where math and English skills are part of the program curriculum, a similar student could earn a degree with only 92 credits. The additional credits required for the degree at the first college represent a full year of class work, at an estimated cost to the student of between \$10,000 and \$16,000.^{xxv}

The effect of math and English requirements on students seeking certificates can be even more striking.

IMPACT: In one healthcare program, a low-skilled student may have to earn as many as 40 (sequential) credits to qualify to study for a 21-credit certificate. At another college in the same region, a student could enter the program directly and earn the certificate in 39 credits of integrated study.

As is true with developmental education requirements generally, few students know about these variations when they make a choice of college and few case managers or navigators in the workforce system are able to provide them with the necessary information. Nor is it clear that this knowledge would make the choice easier. Research tells us that community college students, who are often low-income, working adults, attend the campus that is closest to their home.^{xxvi}

Moving Toward a Policy That Works

The current state of pre-college education in Washington State raises student equity concerns that highlight the importance of Washington's work to adopt a statewide developmental education policy. As the research indicates, students in the same program at different colleges face very different requirements. These requirements lead, in turn, to varying expenditures of time and money, as well as varying risks of failure. Given the importance of this issue to college completion, the state's effort to provide students at all colleges with a real – and equal – opportunity to succeed is both important, and timely.

It should be emphasized here that "equity" and "equal" do not mean "the same." This is a period of intense innovation and considerable uncertainty around effective models for developmental education. One trend among states has been to move toward uniformity; however, it is not at all clear how uniformity serves the student. What is clear is that the diversity of student abilities and needs challenge the idea that any one solution is the answer.

Although national reform efforts are unlikely to result in a single model to improve outcomes for the under-prepared student, there is a growing national consensus on the state policies needed to support the work of innovation. In 2010, *Achieving the Dream*, the Developmental Education Initiative, and Jobs For the Future, joined together to promote a policy framework of "levers" to accelerate the change in student pre-college outcomes. The principal levers are:

- 1) aligning with K-12 systems;
- 2) setting realistic goals for improvement;
- 3) sharing data among colleges and with outside stakeholders;
- 4) improving assessment;
- 5) redesigning instruction; and
- 6) establishing a financial structure that supports the colleges' efforts to innovate and to scale up their improvements.^{xxvii}

What direction might Washington consider taking? Although the reform process is in its beginning stages, there are promising strategies emerging on the state and local fronts:

- **Assessment:** Educators are increasingly questioning "high stake" tests that lock students into lengthy developmental sequences without considering individual characteristics such as prior learning, time out of the education system, language difficulties, and test anxiety. Newly developing diagnostic assessment tools and processes offer the prospect of more accurate placement by shifting the focus to the individual student.

- **Developmental program design:** Lengthy and inflexible “one-size-fits-all” sequences add to assessment deficiencies by treating all students as the same. Work is being done to find curricular and instructional practices that effectively balance the need for remediation with the time spent achieving the necessary level of skill, including approaches that provide options for individual learning styles, needs, abilities, and programmatic goals.
- **Professional/Technical program design:** Instructional models that combine academic and program instruction may be more efficient, and more effective, than the traditional “program-plus-developmental education” model. Approaches drawing current attention include: 1) extending the I-BEST concept to developmental education; 2) creating learning communities that combine college-level coursework with developmental math and English; and 3) incorporating job-specific math and English courses directly into the program curriculum.
- **Program entry scores:** There is considerable momentum to structure professional/technical program curricula so that students can work on their academic skills at the same time as they are taking program courses. Entry standards, when necessary, would be established by data-supported analysis to ensure that the required entry levels are necessary for successful participation in the program.
- **Completion levels:** Established methodology can help determine the actual math and language skills students will need to be successful in their chosen careers. A joint undertaking in this process could both be cost effective for the colleges and establish consistent requirements from college to college.^{xxvii}
- **Data Collection and Dissemination:** Although Washington’s Student Achievement Initiative is producing some publicly available data, the data compare each college to its own previous year’s performance and do not shed light on whether some interventions are working better than others.^{xxix} National policy recommendations strongly endorse a statewide system in which developmental program outcomes are shared among the colleges and with outside stakeholders. With this approach, Washington could create a statewide “laboratory” in which comparative analysis accelerates movement toward a solution.
- **Financial support:** The state formula for colleges is based on enrollments but the colleges are increasingly being held accountable for completions. The modest incentives included in the Student Achievement Initiative do not go far enough to encourage innovation and shared results. As the colleges step up their efforts to improve pre-college outcomes, the state must step in to establish a financial structure that supports the colleges’ efforts to innovate and to scale up their improvements.



Conclusion

The task of figuring out how to help Washington's underprepared adults succeed in college is a daunting one. The national attention to developmental education has resounded beyond the college system and led to a general awareness of the importance of the role the colleges play in remediation. However, the colleges cannot solve the problem on their own. Only through collaboration, pooling resources, and sharing data can the state develop strategies across the K-12, college and workforce systems that better prepare students for the more sophisticated workforce they will be entering.

END NOTES

ⁱ Washington Partnership for Learning, *Improving the Odds: Preparing Washington Students for Family-Wage Jobs*. December 2007, page 2.

ⁱⁱ Carnevale, Smith and Strohl, *Help Wanted: Projecting Jobs and Education Requirements Through 2018*, Georgetown University Center on Education and the Workforce. June 2010.

ⁱⁱⁱ In January 2011, for example, individuals with a high school diploma were more than twice as likely to be unemployed as those with a four-year college degree. Bureau of Labor Statistics, U.S. Department of Labor. <http://www.bls.gov/news.release/empsit.t04.htm>. Moreover, in the last quarter of 2010, the weekly earnings of an individual with a high school diploma were only 59% of the weekly earnings of someone with a four-year college degree. Bureau of Labor Statistics, U.S. Department of Labor. <http://www.bls.gov/news.release/wkyeng.htm>

^{iv} The term “remedial education,” which was once in common use for these programs, is out of favor. While “developmental education” is the most common substitute, the terms “pre-college education” and “transitional education” are also encountered. In this brief, “developmental education” refers to the specific program of math, reading and writing courses that serve as prerequisites to college-level coursework. The term “pre-college education” is used as a broad term that encompasses all educational programs designed to improve foundational academic skills, including literacy programs, basic skills and GED programs as well as developmental education.

^v Research Report No. 09-5, *Role of Pre-College (Developmental and Remedial) Education For Recent High School Graduates Attending Community and Technical Colleges*, Washington State Board of Community and Technical Colleges, 2009. Twenty-nine (29) percent of 2008 high school graduates who enrolled in the community and technical colleges following graduation 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. Research Report No. 09-05, page 3.

^{vi} Research Report No. 09-5, *supra*, note I, at page 10.

^{vii} Bailey, Jeong and Cho, *Referral, Enrollment and Completion in Developmental Sequences in Community Colleges*, *Economics of Education Review* 29 (2010), pages 255–270.

^{viii} Rutschow, Richburg-Hayes, Brock, Orr, Cerna, Cullinan, Kerrigan, Jenkins, Gooden, and MartinLevin, *Turning the Tide, Five Years of Achieving the Dream in Community Colleges*, 2011, <http://www.achievingthedream.org/>; Calcagno, *Remediation in the Community College: An Evaluator’s Perspective*, Community College Research Center, Working Paper No. 9, 2007.

^{ix} See Hughes and Scott-Clayton, *Assessing Developmental Assessment in Community Colleges: A Review of the Literature*, Community College Research Center, Working Paper No. 19, August, 2010.

^x Bailey, Jeong and Cho, *supra*, at page 261.

^{xi} See *Key Facts About Higher Education In Washington*, Washington Higher Education Coordinating Board, 2011, <http://www.hecb.wa.gov>.

^{xii} 2009-2010 Academic Year Report, WSBCTC, page 3.

^{xiii} It is reported that low-income individuals, in particular, are likely to enroll in college after the age of 25 and that those individuals are less likely to be prepared for college. Research Report No-06-4, *The Socio-Economic Well-Being of Washington State: Who Attends Community and Technical Colleges*, Washington State Board of Community and Technical College, 2006.

^{xiv} 2009-2010 Academic Year Report, WSBCTC, page 10.

END NOTES, cont'd

^{xv} 2009-2010 Academic Year Report, WSBCTC, page 30. To receive aid, students must have financial need and be enrolled in a college-level program of study. Adult Basic Education and English as a Second Language classes are not eligible for aid. Students enrolled in one or two courses to upgrade job skills or meet personal interests likewise are not eligible for aid.

^{xvi} 2009-2010 Academic Year Report, WSBCTC, pages 3-4.

^{xvii} 2009-2010 Academic Year Report, WSBCTC, page 20.

^{xviii} Rutschow, Richburg-Hayes, Brock, Orr, Cerna, Cullinan, Kerrigan, Jenkins, Gooden, and MartinLevin, *Turning the Tide, Five Years of Achieving the Dream in Community Colleges*, 2011, <http://www.achievingthedream.org/>. The *Achieving the Dream* report cited here demonstrates the complexity of the task Washington's college system is undertaking; after five years, and with considerable effort and support, the initial *Achieving the Dream* colleges had not yet shown a measurable impact on student outcomes.

^{xix} Much of the data on developmental and professional/technical programs described in this brief was collected in a study SJI and Promote-EDU undertook in 2010. The purpose of the study was to develop information tools for workforce education navigators and their clients to help the clients select a college program. The basic research charge was to "find out what it takes to get a credential" in programs in six economic sectors at the six Seattle area community and technical colleges. The economic sectors were chosen for their potential to yield family-wage jobs in the coming years and included healthcare, automotive technology, business technology, manufacturing, infrastructure and "green" technology, and transportation. Data points, including prerequisites, math and English levels, developmental placement and sequences, total credits, and schedules were mapped for each program. To date, career pathways in accounting, healthcare, business technology and transportation have been fully mapped. To verify that the variability in the data described here was also characteristic of colleges and programs outside the Seattle cohort, the research was expanded geographically and programmatically by spot checking programs at colleges throughout the state. The preliminary results of this research, showing the variability in developmental programs, has been presented to college educators, work force representatives and researchers throughout the state.

^{xx} Each credit represents approximately eleven hours of instruction per quarter. Thus a 5-credit course is typically 55 contact hours. For some of the colleges, these sequences are extended by at least an additional quarter for students referred back to basic skills.

^{xxi} Bailey, Jeong and Cho, *supra*, at pages 264, 267.

^{xxii} See endnote xix above for the source of this data.

^{xxiii} Credentials that are state regulated or that lead to special accreditation are an exception to this statement. These programs, for example those in nursing, are more likely to have a similar core curriculum to meet these outside standards.

^{xxiv} Although these examples refer to only one program (accounting) at five colleges, the variations apply equally to the other credentials that have been examined thus far. Moreover, spot checks of program standards at other colleges in the state show the same degree of variation from program to program.

^{xxv} The figures reported here are taken from the first college's financial aid guide. The lower figure is an estimate of the cost of a full year of college tuition and expenses for a student living at home; the higher figure estimates the cost to a student living independently. These figures do not include the cost of state support for the additional credits or the loss of salary a student might earn by graduating a year earlier.

^{xxvi} See *Report on Washington State Community & Technical Colleges Transportation Access Study*, Washington State University Transportation Research Group, 2009 at http://www.sbctc.ctc.edu/college/d_transportationstudy.

END NOTES, cont'd

^{xxvii} *The Developmental Policy Initiative: State Policy and Strategy Framework*, Jobs for the Future, April 2010, http://www.jff.org/sites/default/files/DEI_State_Policy_Framework_0.pdf

^{xxviii} Educators debate whether a standard of “job readiness” short-changes the professional/technical student who wants to go on later to earn a 4-year degree; however, this concern should not be a driving force in the move to embed job readiness standards in professional/technical programming. There are already models in use that provide options for students seeking higher level degrees. Moreover, the math and English learning that students gain in the professional/technical program should advance their skills generally, and diminish the amount of developmental education they would need to go on to a higher degree.

^{xxix} Levin and Calcagno, *supra*, note v, address at length the importance of developing comparative data.