Cost of Developmental Education: An Update of Breneman and Haarlow

By Joshua Pretlow III and Heather D. Wathington

ABSTRACT: ***Since Breneman and Haarlow (1998) first estimated the national cost of developmental education to be approximately $1 billion dollars, the developmental education landscape has shifted in numerous ways. This paper provides an update to their estimate in light of both these changes and improved data that disaggregates the cost to community colleges and four-year public institutions. An updated national cost estimate of developmental education to public institutions in the academic year 2004-2005 is estimated to be $1.13 billion, a 13% increase over the estimate of Breneman and Haarlow. This paper calls for states to make data on developmental education both transparent and publicly available in order to accurately derive a precise cost of developmental education both at the local and national levels.***

Cost-effectiveness analysis is an evaluative decision-making tool that assesses alternative courses of action or policies.

Joshua Pretlow III
Postdoctoral Research Associate
Currently: Assistant Professor
School of Education
University of Cincinnati
Cincinnatti, OH 45221-0022
pretlojh@ucmail.uc.edu

Heather D. Wathington
Assistant Professor

Curry School of Education
Department of Educational Leadership, Foundations and Policy
University of Virginia
405 Emmet Street South
Charlottesville, Virginia 22904

The emergence of a global economy has fueled the need for highly skilled workers with postsecondary credentials and has placed increased pressure on American higher education to produce a greater number of graduates. In order to remain competitive in this new economic landscape, the American economy requires highly skilled workers who possess a college education, be it a two- or four-year degree (Kirst & Bracco, 2004). Subsequently, President Barack Obama has made education one of his administration's top priorities. In addition to encouraging every American to obtain a minimum of 1 year of postsecondary education, he has challenged higher education to produce, not just enroll, "the highest proportion of college graduates in the world" (Obama, 2009, para. 24).

Since at least a third of all first-time freshmen require a minimum of one developmental course–including perhaps as many as 60% of community college students (National Center for Educational Statistics, 2003)–the effectiveness of developmental education programs is intimately linked to the achievement of the President's ambitious goal. Recent research supports this view, indicating that community college students who successfully complete their developmental sequence go on to graduate or transfer to a four-year institution at comparable rates to students who began at college-level (Bahr, 2010). This finding holds regardless of either the depth (number of developmental course(s) required in one subject) or breadth (number of developmental subject(s) required) of students' developmental needs. For these reasons, researchers, policy makers, and funders have increasingly focused their efforts on developmental education. A notable example is the Lumina Foundation's multiyear, national *Achieving the Dream* initiative; its stated goal is to help community college students, especially those who have been traditionally underserved (e.g., those who require developmental education, have low-income, are underrepresented) to achieve their educational goals (Achieving the Dream, 2007). Furthermore, the Gates Foundation has pledged over $15 million dollars to help strengthen developmental programs with the ultimate goal of increasing postsecondary graduation rates (Gates Foundation, 2009).

Increased attention to developmental education has resulted in many rigorous studies on its effectiveness (Attewell, Lavin, Domina, & Levey, 2006; Bettinger & Long, 2004, 2005; Calcagno, Crosta, Bailey, & Jenkins, 2007; Calcagno & Long, 2008; Martorell & McFarlin, 2011). Although the studies vary in terms of sample, method, and outcomes, all six cite Breneman and Haarlow's (1998) one billion dollar estimate as the cost of developmental education, making their estimate, though over 10 years old, the most cited cost figure. Given the budget climate in which states and institutions are now operating, the need for updated and accurate cost information is imperative if policy makers and administrators are to make informed decisions that balance equity and efficiency. However, although developmental education may be more costly than some alternatives, institutions and states may choose to invest more to obtain a desired end: a more educated citizenry.

This paper seeks to update the cost of developmental education estimate in three ways. First, we provide an update of the cost of developmental education in the state of Texas, which Breneman and Haarlow (1998) used as one of their original data points. Second, through our analysis of improved data, we are able to disaggregate the costs of developmental education to community colleges and four-year public institutions, thus arriving at a more accurate national estimate than was previously available. Third, we estimate a national cost of developmental education to public institutions

in the United States using the improved data. In addition to providing models to estimate costs, we conclude by calling for transparent state funding policies so that the cost of developmental education can be accurately assessed in each state for the benefit of practitioners, researchers, and policy makers alike.

Scope of Problem: Then and Now

Developmental education is seldom assessed for cost effectiveness at the program level, much less at the larger state or national scale, as data are difficult to obtain. Cost-effectiveness analysis is an evaluative decision-making tool that assesses alternative courses of action or policies when resources are limited (Levin & McEwan, 2000). Indeed, it is desirable to select those alternatives that are least costly for reaching a particular objective or that have the largest impact per unit of cost. The most cost-effective solution frees resources for other uses or allows a greater impact for any given investment in comparison to a less cost-effective solution.

The National Center for Education Statistics (NCES) conducted two surveys concerning developmental education, the first in 1996 and the second in 2000. Breneman (1998) provided a summary of the NCES (1996) findings; the 2003 study updated the 1996 findings by analyzing more recent data from 2000. Details on the figures cited from the 2000 NCES survey, including margin of errors, are included in the Appendix. Consistent with the 1996 study, the most telling finding of the 2000 survey was that virtually all public two-year institutions (98%) offered developmental education classes in reading, writing, and math. Though still a significant proportion, fewer public (80%) and private (59%) four-year institutions offered developmental courses. For all institutions, approximately 28% of first-time freshmen enrolled in a minimum of one developmental education course; the corresponding figure for community college students was 42%.

Though some aspects of developmental education did not change significantly from 1996 to 2000, comparing the results of the two NCES surveys does illustrate some notable shifts, many of which do not bode well for either American higher education or its students. Specifically, once students place into developmental education, they are increasingly required to enroll in the corresponding developmental course (NCES, 2003). Mandatory placement into developmental education can possibly lengthen students' time and increase their cost to earn a credential. Furthermore, although they are completing their developmental coursework, students are earning only institutional credit as opposed to elective credit. Institutional credit allows the student to qualify for financial aid programs that require enrollment in a minimum number of credit hours in a given semester; however, these institutional credits do not satisfy degree or certificate requirements. Students pay for courses that improve their basic skills, but these courses do not count toward earning a degree or credential. Further, with the addition of restrictions, the credit-bearing classes in which developmental students can simultaneously enroll have been reduced. This combination of factors may unintentionally serve to increase the amount of time it takes a student to complete his or her credential.

Public two-year colleges have increasingly begun to utilize technology in the delivery of developmental instruction. The quadrupling of courses offered via distance education since 1996 from 3 to 13 % of the total has the ability to significantly impact the cost of developmental education at both an institutional and aggregate level. Although not all courses can be delivered more efficiently through the use of technology, courses that are well positioned to benefit from increased technological delivery are those that are relatively standardized, offered to large numbers of students, and focus on teaching specific skills (Inglis, 2003; Jung, 2003). Developmental courses generally fit this description.

Although each of these practices saves state funds and resources, both serve to limit educational opportunity.

With regard to institutions, two practices that have negative implications for access to higher education have become increasingly common. First, there are a growing number of students who attend four-year colleges and universities that do not offer developmental coursework (NCES, 2003). This means that those students who require developmental education are referred to other institutions, most likely a public two-year community college, to complete their developmental coursework. Second, though a greater number of students both require developmental education and take longer to complete it (NCES, 2003), there has been a shift to limit the amount of time a student can enroll in developmental courses. This shift has been spearheaded by the creation of state laws or policies that manifest in appropriations formulas that fund students' developmental coursework for a limited number of credit hours.

Although each of these practices saves state funds and resources, both serve to limit educational opportunity. By offering developmental coursework only at two-year institutions, states limit student access to greater resources and support that four-year institutions can provide. By setting limits on the time to complete the developmental sequence, states create financial disincentives for institutions to support developmental education, especially community colleges that enroll large numbers of developmental students and are heavily dependent on state funds (Gerlaugh, Thompson, Boylan, & Davis, 2007; Jenkins & Boswell, 2002). Unfortunately for some students who require developmental education, the local community college will be unable to serve them. Many community colleges have decided to discontinue offering the lowest level of developmental courses (Flores, 2011).

Overall, changes in the developmental education landscape have the potential to affect the cost of delivering these programs. The increasing number of students who require developmental courses certainly increases costs. As a consequence, states and higher education systems have sought to decrease costs by supporting the increased use of technology, by mandating the shift of developmental offerings to lower cost community colleges, and by limiting the time a state will fund developmental coursework. Though the individual results of these conflicting fiscal pressures are unknown, taken together, they can significantly affect the cost of developmental education programs to the state.

Methods and Findings

In his original work on the costs of remediation, Breneman (1998) made use of available data on developmental education from both Texas and Maryland to arrive at his estimate for the national cost of developmental education. Data obtained from a subsequent 50-state survey presented in Breneman and Haarlow (1998) led the authors to conclude that there was no evidence to revise the original $1 billion national estimate.

Our analysis relies upon data from the state of Texas for the academic year 2004-05 as the basis for an updated national estimate. Maryland is not included in this update as the data utilized by Breneman (1998) were the product of a one-time state survey, thus updated figures are unavailable. As was the case when Breneman conducted his analysis, Texas employs a formula-based funding system for higher education. Since Texas itemizes various costs in its funding formula and includes developmental education as one category within the formula, the cost of providing developmental education in Texas can be estimated from existing state data. This consistency allows for comparison over time.

In a comment to Breneman's (1998) original analysis, Abraham (1998) developed three techniques, all utilizing exclusively national data, to arrive at different cost estimates for developmental education for fiscal year 1993-1994. Because

comparable data from NCES are limited, we apply Abraham's three methods to data from fiscal year 2000-2001, rather than 2004-2005. It should also be noted that Abraham performed calculations with aggregated data. Due to improved data collection and reporting by NCES, our estimates are obtained by disaggregating the data to arrive at distinct totals for two- and four-year public institutions. These totals are then summed to arrive at an estimated national cost of developmental education to public higher education institutions. Since two-year institutions are touted as lower cost institutions to both students and the state, the disaggregated budget data allows for a more precise estimate of actual costs.

Texas Case Study

In his original analysis, Breneman (1998) reported the cost of developmental education to the state of Texas to be $153.4 million for the 1996-97 biennium. Of this total, $132.0 million, or about 86%, went to two-year community colleges, which included Texas State Technical Colleges and Lamar State Colleges. Four-year universities received the balance of $21.4 million, or about 14%. Breneman further showed that by dividing the amount allocated for developmental education by the total higher education appropriations from the state ($6.9 billion), developmental education accounted for 2.25% of total state appropriations to higher education in the 1996-97 biennium.

Given the rising cost of higher education, increased focus on developmental education (Marcus, 2000; Traub, 1995) and increasing college enrollments in Texas (Texas Higher Education Coordinating Board, 2003), one would expect the appropriations for developmental education to have increased in the intervening decade. This is indeed the case. In the 2006-07 biennium, Texas apportioned $206 million for developmental education (Legislative Budget Board [LBB], 2007). In constant 1996 dollars (adjusting for inflation), this translates to $161.8 million, an increase of 5.5%. Of this total, public two-year institutions received $164 million, or about 80%. Universities received 20% of the total, equal to approximately $40.2 million dollars. As a percentage of total higher education appropriations, developmental education accounted for around 2.04% for the 2006-07 biennium. Though the total amount appropriated to developmental education has increased over the last decade, spending has decreased slightly as a percentage of total higher education expenditures in Texas (see Table 1).

National Estimate

Breneman and Haarlow. In his previous study, Breneman (1998) estimated the national cost of developmental education to be approximately $1 billion. Breneman and Haarlow (1998) did not find cause to revise this estimate in a subsequent, more detailed study. To arrive at this estimate, Breneman assumed that all states spent roughly the same percentage of their budgets on developmental education as did Texas.

As Breneman (1998) has noted and we reiterate, making this unsubstantiated assumption does not imply that Texas' developmental education policies are representative of the other 49 states. Rather, we make this gross estimate using the best data currently available, a point to which we will return later in the paper. Furthermore, since the Breneman and Breneman and Haarlow (1998) studies are still the most cited works in regard to the cost of developmental education, an update utilizing similar methods is justified.

Assuming a spending rate of 2.25% and total state appropriations to public higher education institutions of $40.5 billion in fiscal year 1993-94, Breneman (1998) estimated the national cost of developmental education to be $911 million. This estimate, along with a similar exercise which utilized a calculation based on college expenditures for the state of Maryland, allowed Breneman to conclude that roughly $1 billion was spent nationally on developmental education for fiscal year 1993–94.

Applying Breneman's (1998) method to data for the 2006-07 biennium did not result in a substantially different figure. Nationally, state appropriations to public higher education institutions for fiscal year 2004-05 totaled $55.3 billion. If 2.04% of total state appropriations were devoted to developmental education, the result is a cost of $1.13 billion. To put that cost into perspective, total state appropriations to higher education increased 36.5% from fiscal year 1993-94 to 2004-05 whereas the national estimated cost of developmental education increased 13% during that same period.

Abraham. In a comment to Breneman's (1998) original analysis, Abraham devised three different methods, all using national data collected by NCES, to estimate the cost of developmental education. His purpose was to demonstrate the variability of national estimates produced using different assumptions. Abraham's three methods are updated as follows. Note that data for four-year public institutions are given first, followed by data for two-year public institutions. This represents an improvement in data reporting as the disaggregated data was not available to Abraham when he conducted his analyses. The NCES survey is consistently cited as providing a low estimate of the prevalence of developmental education (see Limitations). Since Abraham's methods rely exclusively on the NCES figures and assume students enroll in a single developmental education course, Abraham's methods result in a lower end estimation of the national cost of developmental education.

Cost as a function of freshmen taking developmental courses. *Four-year.* In the Fall of 2000, total four-year public undergraduate enrollment was 6,055,398. First-time freshmen enrollment was 842,000; first-time freshmen accounted for 13.9% of undergraduate enrollment. Since 20% of freshmen at four-year institutions took developmental education, this means that 168,000, or 2.78%, enrolled in a minimum of one developmental course. Four-year institutions' education and general expenditures for fiscal year 2000-01 were reported as $108.7 billion. Thus 2.78% of $108.7 billion, equal to $3.02 billion, was spent on students who required developmental coursework. Assuming a freshman enrolled in an average of twelve classes during his or her freshmen year, the cost of developmental education was $251.8 million. If a student averaged nine classes per freshman year, the total for developmental education increased to $335.7 million. The numbers of nine and twelve classes were used by Abraham (1998) in his original analysis and thus they are employed here for the purposes of comparison.

Two-year. In the Fall of 2000, total two-year public undergraduate enrollment was 5,697,388. First-time freshmen enrollment was 952,000; first-time freshmen accounted for 16.7% of

CONTINUED ON PAGE 8

Table 1

Texas Developmental and Higher Education Appropriations

Study	Years (biennium)	Appropriations to developmental education	Appropriations to higher education	Percent of total to developmental education
Breneman (1998)	1996-97	153.4 m*	6.9 b*	2.25%
Pretlow & Wathington (2010)	2006-07	206.0 m (161.8[a])	10.1 b (7.86[a])	2.04%

[a] Constant 1996 dollars.
* m = million, b = billion.

CONTINUED FROM PAGE 6

undergraduate enrollment. Since 42% of freshmen at two-year colleges took developmental education, this means that 399,840, or 7.02%, enrolled in a minimum of one developmental course. Two-year institutions' education and general expenditures for fiscal year 2000-01 were reported as $27.9 billion. Thus 7.02% of $27.9 billion, equal to $1.96 billion, was spent on students who required developmental coursework. Assuming a freshman enrolled in an average of twelve classes during his or her freshman year, the cost of developmental education was $163.2 million. If a student averaged nine classes per freshman year, the total for developmental education increased to $217.6 million.

Cost as a function of education funds committed to developmental studies. *Four-year.* A second method of calculating the cost of developmental education is to multiply total educational and general expenditures, $108.7 billion, by the percentage of public first-time undergraduate enrollment in developmental courses, 13.9%. Thus, $15.1 billion was spent to educate first-time freshmen; if 20% of freshmen enrolled in developmental education, then $3.02 billion was spent on students taking at least one developmental course at four-year institutions. To calculate the cost of a single developmental education course, divide this total by twelve, the average number of classes taken by a freshman, for a resulting cost of $251.8 million. If nine courses are applied as the average course load, the total cost increases to $335.7 million.

Two-year. At two-year institutions, the second method involves multiplying total educational and general expenditures, $27.9 billion, by the percentage of public first-time undergraduate enrollment in developmental courses, 16.7%. Thus, $4.65 billion was spent to educate these first-time freshmen. If 42% of freshmen enrolled in developmental education, then $1.96 billion was spent on students taking at least one developmental course at two-year institutions. To calculate the cost of a single developmental education course, divide this total by twelve, the average number of classes taken by a freshman, for a resulting cost of $163.1 million. Using nine as the average course load, the total spent increases to $217.4 million.

Cost as a function of per pupil expenditure. *Four-year.* A third method begins with the average expenditure per student who attended a four-year institution in 2000-2001: $21,622. If one multiplies this expenditure by the total number of first-time freshmen, 842,000, then approximately $18.2 billion was spent to educate all first-time freshmen. Since 20% of students took at least one developmental course, $3.64 billion was spent educating developmental students at four-year institutions. If twelve is once again used as the average course load for a typical freshman, the resulting cost is $303.4 million. When the average course load is reduced to nine per year, the cost increases to $404.6 million.

The figures produced from this exercise demonstrate the variability of the estimated national cost of developmental education.

Two-year. In fiscal year 2000-01, the average expenditure per student who attended a two-year institution was $8,623. If one multiplies this expenditure by the total number of first-time freshmen, 952,000, then approximately $8.21 billion was spent to educate all first-time freshmen. Since 42% of community college students took at least one developmental course, $3.45 billion was spent educating developmental students at two-year institutions. If twelve is once again used as the average course load for a typical freshman, the resulting cost is $287.3 million. When the average course load is reduced to nine per year, the cost increases to $383.1 million.

As Abraham (1998) has emphasized in his study, the figures produced from this exercise demonstrate the variability of the estimated national cost of developmental education. Different assumptions produce different results since data on the cost of developmental education are not collected in a systematic fashion (Saxon & Boylan, 2001). Though the four estimates presented utilize two different fiscal years of data (2004-05 and 2000-01), the estimates can be useful when comparing more recent data to their earlier counterparts (see Table 2).

Discussion

Estimates based on Abraham's (1998) three methods have remained remarkably constant when all is considered. Abraham used data for fiscal year 1993-94 and grouped two- and four-year public institutions. However, when data from fiscal year 2000-01 are used and are disaggregated for the

CONTINUED ON PAGE 10

Table 2

Estimated Cost of Developmental Education

Study	Fiscal Year 1993-94	Fiscal Year 2004-05	% change
Breneman	$1 b*	$1.13 b*	+ 13.00%

	Fiscal Year 2000-01				
Abraham	Low estimate (12 classes)	High estimate (9 classes)	Low estimate[a]	High estimate[a]	
1. Freshmen taking developmental courses	$435.5 m*	$580.7 m*	$415.0 m*	$553.4 m*	– 4.71%
2. Educational funds committed to developmental courses	$407.2 m*	$542.9 m*	$414.9 m*	$553.2 m*	+ 1.89%
3. Per pupil expenditure	$654.5 m*	$872.7 m*	$590.7 m*	$787.7 m*	– 9.75%

[a] This figure is the sum of the two- and four-year estimates.
* b = billion; m = million.

CONTINUED FROM PAGE 8

significant cost differences that exist between two- and four-year public institutions, Abraham's cost estimates are basically unchanged. In calculating the cost of developmental education as a function of freshmen taking developmental courses (method 1), Abraham found expenditures for students taking developmental education to be between $435.5 and $580.7 million per year. The corresponding figure for 2000-01 is between $415 and $553.4 million, a decrease of 4.71%. Estimating the cost of developmental education as a function of educational funds committed to students enrolled in developmental studies (method 2) produced an estimate for fiscal year 1993-94 of between $407.2 and $542.9 million. The result for fiscal year 2000-01 was between $414.9 and $553.2 million, an increase of 1.89%.

The largest discrepancy between Abraham's (1998) estimates occurred when cost was estimated as a function of per pupil expenditure (method 3). Abraham's original calculations indicated a cost of between $260 and $347 million. Upon further inspection, we found some mathematical miscalculations resulted in the reporting of inaccurate figures by the original author. The corrected figures using Abraham's 1993-94 fiscal year data result in a revised estimate of between $654.5 and $872.7 million for fiscal year 1993-94. These revised numbers are more consistent with all estimates for both fiscal years 1993-94 and 2000-01, which reflected estimates of between $590.7 and $787.7 million, a decrease of 9.75%.

Applying Breneman and Haarlow's (1998) model to more recent cost data provides a perspective of the changing patterns of resource allocation of both Texas and the nation over the past decade. The estimates presented previously initially seem large; however, when contextualized by spending on education in general, they are relatively small. Breneman (1998) noted that in fiscal year 1993-94, $1 billion was about 0.4% of the total elementary and secondary schools budget and about 0.9% of public higher education's current fund revenue. The updated estimate, based on data from 2004-05, shows that, as a percentage, the cost of developmental education has declined. Developmental education is about 0.23% ($1.13 billion/ $487 billion) of the elementary and secondary schools budget. Furthermore, the cost of developmental education as a percentage of total revenue of public institutions of higher education using 2004-05 data is about 0.48% ($1.13 billion/ $234.8 billion). This information is summarized in Table 3.

Given the importance of data on developmental education for student success, policymaking, and institutional planning, it is surprising that there has not been more empirical research on costs conducted since Breneman and Haarlow's (1998) work more than a decade ago. A recent report by Strong American Schools (2008) makes an effort to estimate the cost of developmental education combining data from their internal, self-proclaimed nationally represented survey of 668 students and the U.S. Department of Education. Utilizing expenditure data, the authors estimate the cost of remediation in public institutions to be $2.31 to $2.98 billion dollars for the academic year 2004-2005. They further disaggregate this figure and estimate that $708 to $886 million is paid by students in the form of tuition and the balance ($1.61 to $2.01 billion) is funded by institutional subsidies, most notably state and federal governments. Although we concede that many assumptions must be made to conduct a study such as this, we found several challenges to their methodology that make commenting on their estimate impossible.[1]

Given the importance of data on developmental education for student success, policymaking, and institutional planning, it is surprising that there has not been more empirical research on costs conducted.

Limitations

This study is not without limitations, many of which are similar to those encountered by Breneman and Haarlow (1998) in their original analysis. First, although the NCES now collects limited information on developmental education, many scholars argue that institutions underreport their data (Breneman & Haarlow, 1998; Kirst, 2007; Saxon & Boylan, 2001). The most common reasons cited for this phenomena are (a) there is no consistent and accepted definition of what constitutes a developmental course (Breneman & Haarlow, 1998; Merisotis & Phipps, 2000; Saxon & Boylan, 2001); (b) placement test cut scores for assignment to developmental education can vary among institutions and states (Kirst, 2007); and (c) institutions, especially highly selective institutions, do not want to tarnish their closely guarded reputations by reporting the number of developmental students they enroll (Breneman, 1998; Phipps, 1998; Saxon & Boylan, 2001). These three factors, when aggregated, are all potential explanations as to why the number of developmental students is severely undercounted. Consequently, the 2003 NCES study on developmental education, when compared to other estimates of developmental enrollment, is consistently one of the lowest estimates provided (Attewell et al., 2006; Jenkins & Boswell, 2002; Kirst, 2007). If the number of students in developmental education is underestimated by the NCES, this would bias the cost results downward.

Second, and consistent with Breneman and Haarlow (1998), this analysis does not include the costs of developmental courses provided by either private institutions or through noncourse-based programs. In reference to the former, though private institutions do provide developmental instruction to their students (NCES 1996, 2003), the cost to the tax-paying public and individual states to deliver such instruction is not as direct as with public institutions. With regard to the latter, institutions in Texas have implemented noncourse-based offerings such as summer bridge programs

CONTINUED ON PAGE 12

Table 3

Cost of Developmental Education as a Percentage of Expenditures

Study	Estimated national cost of developmental education	Developmental education as a % of total K-12 appropriations	Developmental education as a % of total higher education revenues
Breneman (FY 93-94)	$1.00 billion	0.40%	0.90%
Pretlow & Wathington (FY 04-05)	$1.13 billion	0.23%	0.48%

[1] Although the authors give a detailed account of their methodology in arriving at the cited cost figure (see Appendix B of their study), there is no information provided on the "nationally represented survey." This makes it impossible to know their survey universe. If their survey population was all college students or all college students referred to developmental course(s) or all students who sat for a placement test, their results would likely be dramatically affected. Without this information, it is impossible to comment on their results.

CONTINUED FROM PAGE 10

and accelerated modules to help students more quickly complete their developmental requirements (Wathington et al., 2011). Since Texas did not reimburse institutions for noncourse-based instruction during the 2006-07 biennium, these costs are excluded. However, one should note that with the passage of House Bill 1244 and Senate Bill 1564 in the Spring of 2011, Texas has moved to create alternative state funding structures for noncourse-based developmental education. Including these figures in future calculations will improve the precision of future estimates.

Third, this estimate contains only the cost to the nation and does not take into account the costs to the individual student in terms of time, tuition, or forgone income. Though a cost-effectiveness, cost-utility or cost-benefit analysis as outlined in Levin and McEwan (2000) would be ideal, the data for this endeavor are currently unavailable on a national scale. The updated estimate provided in this study, combined with recent findings concerning the outcomes of developmental students (Attewell et al., 2006; Bahr, 2010; Bettinger & Long, 2004, 2005; Calcagno et al., 2007; Calcagno & Long, 2008; Martorell & McFarlin, 2011), is a first step in approximating the costs and benefits of developmental education.

Implications

The national cost estimate of developmental education has remained relatively consistent over time, all things considered. Though some would argue that this is positive, this finding should be interpreted knowing that the need for these services has increased over the same time period (NCES, 2003). Though some available data does suggest that institutions of higher education have found ways to deliver developmental education more efficiently (e.g., utilizing technology in delivery methods and restricting developmental education to lower cost community colleges), we argue that this "efficiency" has come at the expense of equity for many developmental students.

State governments, which provide the largest share of a community college's funding (Breneman & Nelson, 1981; Cohen & Brawer, 2008), have de-incentivized community colleges from offering developmental courses on three levels: state, institutional, and individual. On a state level, 22 states or higher education systems have either reduced or eliminated developmental offerings (Parker, 2007). This restriction takes the form of either an outright ban on four-year institutions offering developmental courses or a state refusing to fund developmental students in their full-time equivalent (FTE) funding formulas for four-year institutions (Jenkins & Boswell, 2002). This denies developmental students access to the increased support and services offered by better resourced four-year institutions.

On an institutional level, two states employ a funding formula that penalizes two-year institutions that offer developmental courses by reimbursing those institutions less per FTE for students in developmental education than for students enrolled in college-level courses (Jenkins & Boswell, 2002). On a student level, four states prohibit the use of state financial aid to pay for developmental courses; hence the students have to fund these noncredit courses themselves. Furthermore, 13 states limit either the number of times they will fund an individual student to attempt a particular course or the total number of developmental credit hours they will fund for single student (Jenkins & Boswell, 2002).

This trend of limiting funding on the state, institutional, and student levels does not appear to be reversing (Parker, 2007). In the years 2000–02, 11 state legislatures had floor debates that included either limiting or eliminating developmental course offerings in higher education (Jenkins & Boswell, 2002). At the very least, many state policy makers feel that, if higher education is to offer developmental courses, less-expensive community colleges are the proper venue. The sum of these state policies has resulted in the restriction of developmental students to the community college, an institution that has fewer resources per student than do four-year institutions (Bailey & Morest, 2006). Further, since otherwise similar students who begin postsecondary education at a community college are less likely to transfer and earn a Bachelor's degree when compared to students who begin at a four-year institution (Long & Kurlaendar, 2009), students who require developmental education face a significant uphill struggle. The resulting system in which fewer resources are disbursed to institutions with large numbers of students having great financial and educational need is not only inequitable but contributes to further stratification of the higher education system.

State governments . . . have de-incentivized community colleges from offering developmental courses.

As this study demonstrates, the available information on the costs of developmental education is still lacking. In order to more fairly evaluate the costs and benefits of developmental education, states and public institutions should make their allocations to developmental education more transparent by systematically documenting the costs and benefits of specific interventions and developmental education as a whole. This would allow the costs and benefits to the state, an institution, and individual developmental programs and students be more accurately assessed.

Conclusion

In the face of difficult budget times and numerous policy alternatives, understanding the true costs and benefits of developmental education is essential for solid decision-making at both a state and institutional level. This study is a first step in assessing the updated costs of developmental education. Used in tandem, information on the costs and benefits of developmental education allows decision makers to balance issues of efficiency and equity when faced with difficult choices. If American postsecondary education is to respond to President Obama's call to significantly increase America's number of college graduates, both additional state funding and a more nuanced understanding of state developmental education policies–their costs and their benefits–will be required.

References

Abraham, A. A. (1998). Comment to remediation in higher education: Its extent and cost. In D. Ravitch (Ed.), *Brookings papers on education policy* (pp. 371-376). Washington, DC: The Brookings Institution.

Achieving the Dream. (2007). *Success is what counts*. Retrieved from http://www.achievingthedream.org/docs/SUCCESS-counts-FINAL-11.6.pdf

Attewell, P., Lavin, D., Domina, T., & Levey, T. (2006). New evidence on college remediation. *Journal of Higher Education, 77*(5), 886-924.

Bahr, P. R. (2010). Revisiting the efficacy of postsecondary remediation: The moderating effects of depth/breadth of deficiency. *The Review of Higher Education, 33*, 177-206.

Bailey, T., & Morest, V. (2006). *Defending the community college equity agenda*. Baltimore, MD: The Johns Hopkins University Press.

Bettinger, E., & Long, B. (2004). *Shape up or ship out: The effects of remediation on students at four-year colleges* (NBER Working Paper No. 10369). Cambridge, MA: National Bureau of Economic Research.

Bettinger, E., & Long, B. (2005). *Addressing the needs of under-prepared college students: Does college remediation work?* (NBER Working Paper No. 11325). Cambridge, MA: National Bureau of Economic Research.

Breneman, D. W. (1998). Remediation in higher education: Its extent and cost. In D. Ravitch (Ed.), *Brookings papers on education policy* (pp. 359-382). Washington, DC: The Brookings Institution.

Breneman, D. W., & Haarlow, W. N. (1998). Remediation in higher education: A symposium featuring developmental education: Costs and consequences. *Fordham Report, 2*(9). Washington, DC: Thomas B. Fordham Foundation.

Breneman, D. W., & Nelson, S. C. (1981). *Financing community colleges: An economic perspective*. Washington, DC: Brookings Institution.

Calcagno, J. C., Crosta, P., Bailey, T., & Jenkins, D. (2007). Stepping stones to a degree: The impact of enrollment pathways and milestones on community college student outcomes. *Research in Higher Education, 48*(7), 775-801.

Appendix

Standard Errors from 2000 NCES Survey

	M	*SE*	95% confidence interval	
Offer Developmental Education				
Public 2-year	98%	1.0	96.04	99.96
Public 4-year	80%	1.3	77.45	82.55
Private 4-year	59%	3.1	49.83	68.17
Freshmen Enrolling in Minimum of 1 Developmental Education Course				
All Institutions	28%	0.4	27.22	28.78
Public 2-year	42%	0.9	40.24	43.76
Use technology to offer developmental education				
All Institutions	13%	1.0	11.04	14.96
Public 2-year	25%	1.8	21.47	28.53

Source: National Center for Educational Statistics (NCES). (2003). *Remediation at degree-granting at postsecondary institutions in Fall 2000* (A Statistical Analysis Report). Washington, DC: U.S. Department of Education, Institute of Education Sciences.

Calcagno, J. C., & Long, B.T. (2008). *The impact of postsecondary remediation using a regression discontinuity approach: Addressing endogenous sorting and noncompliance* (NBER working paper 14194). Cambridge, MA: National Bureau of Economic Research.

Cohen, A. M., & Brawer, F. B. (2008). *The American community college* (5th ed.). San Francisco, CA: Jossey-Bass.

Flores, R. (2011, February 17). False hope. *Inside Higher Education*. Retrieved from http://www.insidehighered.com/layout/set/popup/views/2011/02/17/essay_questions_remedial_education_and_admissions_policies_at_community_colleges

Gates Foundation. (2009). *Community colleges and states selected to boost college graduation rates by improving developmental courses and strategies*. Retrieved from http://www.gatesfoundation.org/press-releases/Pages/raising-graduation-rates-community-colleges-090622.aspx

Gerlaugh, K., Thompson, L., Boylan, H., & Davis, H. (2007). National study of developmental education II: Baseline data for community colleges. *Research in Developmental Education*. Retrieved from http://www.ncde.appstate .edu/images/RiDE%2020-4.pdf

Inglis, A. (2003). A comparison of online delivery costs with some alternative distance delivery methods. In M. G. Moore & W. G. Anderson (Eds.), *Handbook of distance education* (pp. 727–740). Mahwah, NJ: Lawrence Erlbaum Associates.

Jenkins, D., & Boswell, K. (2002). *State community college remediation policy*. Denver, CO: Education Commission of the States.

Jung, I. (2003). Cost-effectiveness of online education. In M. G. Moore & W. G. Anderson (Eds.), *Handbook of distance education* (pp. 717–726). Mahwah, NJ: Lawrence Erlbaum Associates.

Kirst, M. (2007). *Who needs it? Identifying the proportion of students who require postsecondary developmental education is virtually impossible*. Retrieved from http://www.highereducation.org/crosstalk/ct0107 /voices0107-kirst.shtml

Kirst, M. W., & Bracco, K. R. (2004). Bridging the great divide. In M. W. Kirst & A. Venezia (Eds.), *From high school to college: Improving opportunities for success in postsecondary education* (pp. 1-30). San Francisco, CA: Jossey-Bass.

Levin, H. M., & McEwan, P. J. (2000). *Cost-effectiveness analysis: Methods and applications* (2nd ed.). Thousand Oaks, CA: Sage.

Legislative Budget Board (LBB). (2007). *The cost of developmental education in Texas*. Austin: The Charles A. Dana Center, University of Texas at Austin. Retrieved from http://www.lbb.state.tx.us/Higher_Education/Cost_Developmental_Ed_TX_0407.pdf

Long, B. T., & Kurlaendar, M. (2009). Do community colleges provide a viable pathway to a Baccalaureate Degree? *Education Evaluation and Policy Analysis, 31*(1), 30-53.

Marcus, J. (2000). Revamping developmental education. *National Crosstalk, 8*(1). Retrieved from http://www.highereducation.org/crosstalk/ct0100/front.shtml

Martorell, P., & McFarlin, I. (2011). Help or hindrance? The effects of college remediation on academic and labor market outcomes. *The Review of Economics and Statistics, 92*(2), 436-454.

Merisotis, J. P., & Phipps, R. A. (2000). Developmental education in colleges and universities: What's really going on? *The Review of Higher Education, 24*(1), 67-86.

National Center for Educational Statistics (NCES). (1996). *Developmental education at higher education institutions in Fall 1995* (Statistical Analysis Report). Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

National Center for Educational Statistics (NCES). (2003). *Remediation at degree-granting at postsecondary institutions in Fall 2000* (Statistical Analysis Report). Washington, DC: U.S. Department of Education, Institute of Education Sciences.

Obama, B. (2009, July 14). *Remarks by the President on the American Graduation Initiative*. Washington, DC: The White House, Office of the Press Secretary. Retrieved from http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-on-the-American-Graduation-Initiative-in-Warren-MI/

Parker, T. L. (2007). *Ending college remediation: Consequences for access and opportunity* (ASHE/Lumina Policy Briefs and Critical Essays No. 2). Ames: Iowa State University, Department of Educational Leadership and Policy Studies.

CONTINUED ON PAGE 44

CONTINUED FROM PAGE 26

spokespersons are concerned about the developmental students who arrive academically unready and emotionally apprehensive to community colleges and two- and four-year institutions.

Whether or not educators see the origin of this problem at the high school level and advocate for stricter social/academic disciplines prior to college does not alter the fact that an ever-increasing number of students transitioning into college are not adequately prepared. They are not just recent high school graduates; rather a variety of backgrounds and motivations are represented in this group. Many demonstrate an inability to directly enter the college track without a different approach and an institution-wide change of course. This article explains some explicit measures faculty can integrate into their content teaching that enrich the number of competencies that can be addressed simultaneously. In the process developmental students can obtain the very skills exemplified in emotional intelligence that may go unnoticed yet may be equal determinants with cognitive preparedness for success in college courses.

Conclusion

Educators can infuse opportunities in the college classroom to teach students competencies beyond the content when a collaborative setting is established by choosing to become well-versed in this design and to expand the very value of class time. Collaboration works in unison with the traditional lecture approach, integrating time for students to not only digest the material to expand knowledge base but to think critically and creatively about the material itself to reach a common goal. Then it takes learning a step further using its interactive and reflective nature to build social competencies and cooperation; raise confidence and empathy among its learners.

References

Brookfield, S. D. (2006). *The skillful teacher: On techniques, trust, and responsiveness in the classroom* (2nd ed.). San Francisco, CA: Jossey-Bass.

Chinn, C., O'Donnell, A., & Jinks, T. (2000). The structure of discourse in collaborative learning. *Journal of Experimental Education, 69*(1), 77-97.

Dillenbourg, P., Baker, M., Blaye, A., & O'Malley, C. (1996). The evolution of research on colcollaborative learning. In E. Spada & P. Reiman (Eds.), *Learning in humans and machine: Towards an interdisciplinary learning science* (pp. 189-211). Oxford: Elsevier.

Draskovic, I., Holdrinet, R., Bulte, J., Bolhuis, S., & Van Leeuwe, J. (2004). Modeling small-group learning. *Instructional Science, 32*(6), 447–473.

Gokhale, A. A. (1995). Collaborative learning enhances critical thinking. *Journal of Technology Education, 7*(1), 22-30.

Goleman, D. (1995). *Emotional Intelligence: Why it can matter more than IQ for character, health, and lifelong achievement*. New York, NY: Bantam Books.

Johanson, J. (2010). Cultivating critical thinking: An interview with Stephen Brookfield. *Journal of Developmental Education, 33*(3), 26-30.

Johnson, D. W., & Johnson, R. T. (1984). Cooperative small-group learning. *National Association of Secondary School Principals, 14*(1), 1-6.

Johnson, R.T., & Johnson, D.W. (1997). Cooperative learning: *Two heads are better than one* (IC#18). Retrieved from http://www.context.org/ICLIB/IC18/Johnson.htm

Liff, S. (2003). Social and emotional intelligence: Applications for developmental education. *Journal of Developmental Education, 26*(3), 28-34.

Low, G. R., & Nelson, D. B. (2006). Emotional Intelligence and college success: A research-based assessment and intervention model. In *Center for Education Development & Evaluation (CEDER)* Retrieved from Texas A&M University-Kingsville website: 1-10. http://www.operamentis.com/upload/O/EI_and_College_Success-2006.cederpaper.pdf

Paul, R., & Elder, L. (2010). Critical thinking: Ethical reasoning as essential to fairminded critical thinking, part III. *Journal of Developmental Education, 33*(3), 34-35.

Reiff, H., Hatzes, N., Bramel, M., & Gibbon, T. (2001). The relation of LD and gender with emotional intelligence in college students. *Journal of Learning Disabilities, 34*(1), 66-78.

Russell, A. (2008, August). Enhancing college student success though developmental education. In *American Association of State Colleges and Universities* (A Higher Education Policy Brief, pp. 1-8). Retrieved from http://www.aascu.org/media/pm/pdf/pmaug08.pdf

Simpson, M. L., Stahl, N., & Francis, M. A. (2004). Reading and learning strategies: Recommendations for the 21st century. *Journal of Developmental Education, 28*(2), 2-14.

Slavin, R. E. (1981). Synthesis of research on cooperative learning. *Educational Leadership, 38*(8), 655-660.

Smith, B., & MacGregor, J. (1992). What is collaborative learning? In A. Goodsell, M. Mahler, V. Tinto, B. L. Smith, & J. MacGregor (Eds.), *Collaborative learning: A sourcebook for higher education* (pp. 9-22).University Park, PA: National Center on Postsecondary Teaching, Learning, and Assessment, Pennsylvania State University.

Sousa, D. (2006). *How the brain learns* (3rd ed.). Thousand Oaks, CA: Corwin Press.

Veenman, S., Denessen, E., van den Akker, A., & van der Rijt, J. (2005). Effects of cooperative learning program on the elaborations of students during help seeking and help giving. *American Research Journal, 42*(1), 115-151.

Webb, N., Farivar, S., & Mastergeorge, A. (2002). Productive helping in cooperative groups. *Theory into Practice, 41*(1), 13-20.

Wilkinson, D. P. (2009). Restructuring developmental math courses to enhance emotional intelligence. In *NADE Selected Papers*. Retrieved from NADE website: http://www.nade.net/documents/SCP02/RestructuringDevelopmentalMathCourses.doc

Wood, K. D. (1992). Fostering collaborative reading and writing experiences in mathematics. *Journal of Reading,* 36(2), 96-103.

CONTINUED FROM PAGE 13

Phipps, R. (1998). *College remediation: What it is, what it costs, and what's at stake*. Washington, DC: Institute for Higher Education Policy. Retrieved from http://www.ihep.org/Publications/publications-detail.cfm?id=12

Saxon, D. P., & Boylan, H. R. (2001). The cost of developmental education in higher education. *Journal of Developmental Education, 25*(2), 2-8.

Strong American Schools. (2008). *Diploma to nowhere*. Retrieved from http://www.deltacostproject.org/resources/pdf/DiplomaToNowhere.pdf

Texas Higher Education Coordinating Board (THECB). (2003). *Participation and success forecast, 2003-2015*. Austin, TX: Author. Retrieved from http://www.thecb.state.tx.us/GeneralPubs/Agenda/Ag2003_01/VA1/VA1White.pdf

Traub, J. (1995). *City on a hill: Testing the American dream at City College*. New York, NY: Perseus.

Wathington, H., Barnett, E., Weissman, E., & Teres, J. (2011). *Getting ready for college: An implementation and early impact study of eight Texas DSB programs*. New York, NY: National Center for Postsecondary Research, Columbia University. Retrieved from http://www.postsecondaryresearch.org/index.html?Id=Publications&Info=NCPR+Publications

Advertisers Index