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Building Bridges to Postsecondary Training for Low-Skill Adults: Outcomes of Washington State's I-BEST Program

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Each year, community colleges, schools, and community organizations offer basic skills instruction to more than 2.5 million adults with limited skills and education. Such programs include Adult Basic Education (ABE) and GED preparation programs for individuals who do not have a high school credential and English-as-a-Second-Language (ESL) programs for persons with limited proficiency in English. Yet few of these students advance successfully to college-level education and training, even when they attend a basic skills program offered by a community college. Not doing so limits the potential of these individuals to secure jobs that pay family-supporting wages and that offer opportunities for career advancement. Integrated Basic Education and Skills Training, or I-BEST, is an innovative program created to address this problem.

First piloted in 2004-05, I-BEST was developed by the community and technical colleges in Washington State to increase the rate at which adult basic skills students enter and succeed in postsecondary occupational education and training. Under the I-BEST model, basic skills instructors and career-technical faculty jointly design and teach college-level occupational, or what in Washington State are called "workforce," courses for adult basic skills students. Instruction in basic skills is thereby integrated with instruction in college-level career-technical skills. This model challenges the conventional notion that basic skills instruction should be completed by students prior to starting college-level courses. The approach thus offers the potential to accelerate the transition of adult basic skills students into college programs.

This Brief, which summarizes a longer paper, presents findings from a CCRC study that investigated the outcomes of students who participated in the program. The study compared, over a two-year tracking period, the educational outcomes of I-BEST students with those of other basic skills students, including students who comprised a particularly apt comparison group — those non-I-BEST basic skills students who nonetheless enrolled in at least one workforce course in academic year 2006-07, the period of enrollment examined in the study. The analyses controlled for observed differences in background characteristics and enrollment patterns of students in the sample. We examined data on more than 31,000 basic skills students in Washington State, including nearly 900 I-BEST participants.

The Development of I-BEST

The design of I-BEST was motivated by research suggesting that teaching basic skills in the context of materials that are of interest to the student — sometimes called "contextual instruction" — can improve the learning of basic skills by adults. Under I-BEST, basic skills instruction is typically customized to a given workforce program. For example, in an I-BEST nursing program, increased emphasis is placed on learning medical terms in addition to mastering everyday vocabulary used in all fields. If a student is having difficulty understanding technical material because of problems with English, the basic skills instructor is there to help. The theory is that student motivation and achievement will increase because students are able to immediately experience the usefulness of their basic skills education in learning technical skills and knowledge.

Both the basic skills instructor and the workforce instructor are required to be present in class for at least half of the total instructional time in an I-BEST course. Students receive college credit for the workforce portion of the program, but not for the basic skills instruction. While students may be referred to I-BEST programs by persons affiliated with a given college or by outside organizations, such as an employment center, participants often find out about I-BEST through word of mouth or by attending a non-I-BEST basic skills course (either ABE/GED or ESL).

Preliminary analyses of I-BEST program outcomes (which did not control for student characteristics) by researchers at the Washington State Board for Community and Technical Colleges (WSBCTC) found that participating students were substantially more likely than non-participating adult basic skills students to advance to college-level workforce programs and to reach the "tipping point" of having earned at least one year of credits and a credential. Reaching this point was correlated with a substantial earnings advantage among participants (Prince & Jenkins, 2005; WSBCTC, 2005, 2008). Based on these promising early results, the WSBCTC approved increased funding of programs using the I-BEST model. I-BEST courses receive 75 percent more funds per full-time-equivalent student than do regular basic skills courses to support the team teaching and added coordination involved in I-BEST programs.

With this enhanced funding, the program model has expanded from pilots at 5 colleges in 2004-05 to programs at all 34 community and technical colleges in the Washington State system. Nearly 140 I-BEST programs are currently offered in such fields as nurse assistant, early childhood education, and business technology. The WSBCTC requires that credits earned in I-BEST programs,

which are typically a single quarter term in length (the Washington community and technical colleges operate on a quarter system), apply to certificate or degree programs that are part of a "career pathway," that is, programs that clearly connect to further education and career-path employment in the given field.

Data and Methods

The data used in this study were drawn from an administrative dataset shared with CCRC researchers by the WSBCTC on both I-BEST and non-I-BEST students who enrolled at any college in Washington State's community and technical college system at any time during the academic year 2006-07. We chose to study students who enrolled in 2006-07 because it was the first year that the program moved beyond the pilot phase and was in full operation. We restricted our study to those students who took a non-credit adult basic skills course (including, of course, the I-BEST students themselves) in that academic year. We did not include the many students who enrolled directly in programs designed to prepare for transfer to baccalaureate programs, because I-BEST programs exist only in occupational fields. We also restricted our study to students in the 24 colleges that offered I-BEST in 2006-07 (the program was expanded to all 34 colleges the following year).

The dataset contains information on the socioeconomic and demographic characteristics of each student in the sample, as well as transcript data, which we used to determine the number of credits completed and credentials earned. The transcript data enabled us to track students from the first quarter each student enrolled in the system through the end of academic year 2007-08, making it possible to control for any credits earned prior to 2006-07.

The study was designed to examine the effects of participation in I-BEST on the following educational outcomes over two years:

- Whether a student earned any college credits;
- The total number of college credits earned;
- The number of college vocational credits earned;
- Whether the student persisted into the following academic year;
- Whether the student earned a certificate or associate degree; and
- Whether the student achieved gains on basic skills tests.

For each of these outcomes, we first produced descriptive statistics comparing I-BEST students with the following two groups (the second is a subset of the first): all basic skills students not enrolled in I-BEST ("Non-I-BEST students") and those basic skills students not in I-BEST who took at least one workforce course during 2006-07 ("Non-I-BEST Workforce students").

We then performed regressions to compare outcomes between I-BEST students, the treatment group, and Non-I-BEST Workforce students, our comparison group (the full report also discusses findings for Non-I-BEST students who did not take a workforce course). In each case, we controlled for socioeconomic and demographic characteristics, enrollment intent and intensity, and previous schooling (all shown in Table 1, discussed below).

We considered the treatment in this study to be *enrollment* in I-BEST, rather than *completion* of an I-BEST program, because we wanted to view any program attrition effects as part of the program itself; that is, we wanted in our estimates of program effects to account for how successful I-BEST was at retaining students. Nevertheless, we were informed by WSBCTC staff that I-BEST programs have high retention rates.

In addition to regression analysis, we also estimated differences in student outcomes using another analytic method, propensity score matching (PSM), which matches treated subjects — in this case, students who enrolled in an I-BEST program — to selected untreated control subjects — in this case, basic skills students with similar background characteristics who did not enroll in I-BEST.

Although the two methods draw on different groups of students and therefore cannot be directly compared, we used both regression analysis and PSM to see how similar the results from the two methods would be and thus carry out an informal test of the robustness of our findings. For technical reasons described in the paper on which this Brief is based, we give more credence to the estimates of treatment effects produced by PSM than to the results of the regressions. Neither method allows us to correct for selection bias that could be caused by characteristics we do not observe or measure, however. Selection into I-BEST is not random; it may attract students who are more motivated than others with similar backgrounds and preparation for success in their education or careers.

Findings

We start by giving descriptive statistics on the I-BEST students, the Non-I-BEST students, and the Non-I-BEST Workforce students in our sample. We then present results of the regression and PSM analyses for each outcome. Standard errors for specific findings, found in the full report, are not shown here.

Descriptive characteristics

Overall, 896 I-BEST students were enrolled at 24 community or technical colleges in Washington State in academic year 2006-07. Of the 30,182 Non-I-BEST students in the sample, 1,356 also took a workforce course. Thus, like the I-BEST students, the latter enrolled in both basic skills and workforce coursework in 2006-07. However, unlike the I-BEST students, they did not necessarily take the coursework concurrently, and they did not take it as part of an integrated program designed to accelerate the transition from basic skills to college-level workforce programs. These Non-I-BEST Workforce students comprise the group that we believe is most comparable to the I-BEST group.

Table 1 shows the background characteristics that were used as control variables in the multivariate models. There are noteworthy similarities and differences between I-BEST students and the Non-I-BEST Workforce student subset. Both the I-BEST and the Non-I-BEST Workforce students were mainly ABE/GED students (as opposed to the Non-I-BEST students as a whole, who were predominantly ESL students). But Non-I-BEST Workforce students were more likely than I-BEST students to indicate upon entry that they intended to earn an academic credential or transfer to a four-year institution. Twenty percent of Non-I-BEST Workforce students indicated so, compared with seven percent of I-BEST students. Other differences of note are in the percentage of students who received financial aid and the percentage enrolled full time. In both cases, I-BEST students held an advantage over Non-I-BEST Workforce students in that they were more likely to receive aid and enroll full time. In terms of race/ethnicity, I-BEST students were more likely than Non-I-BEST Workforce students to be Black.

Table 1. Characteristics of Basic Skills Students, 2006-07

	I-BEST	All Non-I-BEST	Non-I-BEST Workforce
Number of students in program	896	30,182	1,356
Program classification			
I-BEST student	100%	0.0%	0.0%
ABE/GED student	69.0%	36.0%	66.4%
ESL student	30.9%	63.8%	33.3%
Non-I-BEST Workforce student	0.0%	4.5%	100.0%
Social and economic characteristics			
Mean age	32.5	32.3	31.9
Female	64.8%	60.5%	69.2%
Hispanic	18.4%	38.3%	21.3%
Black, non-Hispanic	12.1%	6.9%	6.1%
Asian/Pacific Islander	12.3%	15.0%	12.4%
Single with dependent	22.2%	14.0%	22.8%
Married with dependent	27.8%	26.5%	24.1%
Disabled	7.1%	3.8%	11.0%
Estimated SES quintile (1 is highest, 5 is lowest)	3.6	3.5	3.5
Current schooling characteristics			
Intent is vocational (workforce training)	72.4%	22.7%	48.4%
Intent is academic (degree and/or transfer)	7.4%	9.1%	20.0%
Received aid	25.9%	2.1%	14.2%
Enrolled full time	67.1%	32.6%	49.0%
First enrolled in 1st quarter	30.1%	27.5%	40.0%
First enrolled in 2nd quarter	41.0%	33.1%	40.2%
First enrolled in 3rd quarter	18.5%	22.5%	15.6%
First enrolled in 4th quarter	10.4%	16.9%	4.2%
Previous schooling characteristics			
Mean college credits	13.9	0.9	8.8
Mean vocational credits	9.1	0.6	5.8
GED	12.7%	4.0%	10.0%
High school graduate	27.3%	16.9%	25.7%
Some college	10.4%	4.1%	7.5%
Certificate	3.7%	1.7%	3.4%
Associate degree	2.5%	1.8%	2.2%
Bachelor's degree	4.0%	4.6%	5.1%

Earning college credit

Using logistic regression analysis, we estimated that the probability of earning college credit for the I-BEST students was 34 percentage points higher than that for the Non-I-BEST Workforce students. The probability of earning college credit was 84 percent for I-BEST students, compared with 50 percent for Non-I-BEST Workforce students. There were no significant differences between the estimates for I-BEST students who started in ABE/GED and those who started in ESL. Both groups appear to have benefited similarly by enrolling in I-BEST.

Using PSM, we estimated that the average difference in the probability of earning college credit between I-BEST students and students in the matched comparison group was 23 percentage points. The probability for I-BEST students was 90 percent; it was 67 percent for the comparison group.

As previously mentioned, we cannot statistically compare the results of the regressions with those of the PSM analysis because each method takes a different approach to selecting appropriate comparison groups. However, the fact that these two different methods yield effect size estimates that are similar in magnitude increases our confidence in the results. PSM may give a more accurate estimate of the program's apparent effect on a given outcome.

Number of credits earned

Using OLS regression analysis, we estimated that I-BEST students earned an average of 45 quarter-term college credits, compared with 31 quarter-term credits for the Non-I-BEST Workforce students — a difference of 14 college credits. ABE/GED and ESL students in I-BEST earned 19 and 8 college credits more than those earned by Non-I-BEST Workforce students who were enrolled in ABE/GED and ESL, respectively.

With respect to college vocational credits (a subset of the college credits discussed above), we estimated that, on average, I-BEST students earned 40 vocational credits, while Non-I-BEST Workforce students earned 22 vocational credits — a difference of 18 vocational credits. ABE/GED I-BEST students earned 21 more vocational credits than the ABE/GED Non-I-BEST Workforce group. ESL I-BEST students earned 14 more credits than ESL Non-I-BEST Workforce students.

Using PSM, we estimated that the average number of college credits earned by I-BEST students was 52 credits, compared with an average of 34 credits for the matched comparison group — a difference of 18 college credits. An additional PSM estimate found that I-BEST students earned an average of 45 vocational credits, while the matched comparison group earned an average of 24 vocational credits — a difference of 21 vocational credits. Though not directly comparable, the regression and PSM estimates are of similar magnitude, indicating that the results are robust.

Persisting into 2007-08

We measured persistence into the second academic year, 2007-08, by examining whether a student had any transcript record in that year. By this definition, in order to have persisted, students must have completed, though not necessarily passed, a course in that year. We also considered students as having persisted if they earned an award in 2006-07, even if they did not have a transcript record in 2007-08, because these students experienced a successful outcome.

Using logistic regression, we estimated that I-BEST students had a probability of persisting that was 13 percentage points higher than Non-I-BEST Workforce students. We estimated that I-BEST students had an 80 percent probability of persisting into the second year (or completing a credential), compared with 67 percent for Non-I-BEST Workforce students. Among those enrolled in ABE/GED in both these groups, I-BEST students had a probability that was 12 percentage points higher. The corresponding difference in probability for ESL students was 15 percentage points.

Using PSM, we found that I-BEST students had a probability of persisting that was 17 percentage points higher than matched students. The I-BEST students had a 78 percent probability of persisting, compared with 61 percent for the matched students. Again, the results of the PSM model are similar to those of the regressions.

Earning an award

To count in our analysis, awards may have been earned at any time within the two academic years of 2006-07 and 2007-08. It is important to note that virtually all of the awards earned by the students under study here were certificates (rather than associate degrees).

Our logistic regression results indicate that I-BEST students had a probability of earning an award that was 35 percentage points higher than that of Non-I-BEST Workforce students. We estimated that I-BEST students had a 51 percent probability of earning an award, compared with 16 percent for Non-I-BEST Workforce students. ABE/GED I-BEST students had a probability of earning an award that was 29 percentage points higher than ABE/GED

Non-I-BEST Workforce students. For I-BEST and Non-I-BEST Workforce students enrolled in ESL, the respective difference was 47 percentage points.

Using PSM, we found that I-BEST students had a 55 percent probability of earning an award, compared with only 15 percent for the matched group — a 40 percentage point difference. The PSM estimates are similar to those from the regression analysis.

Achieving gains on basic skills tests

To make point gains on basic skills tests in our analysis, students needed to show a gain on any of the Comprehensive Adult Student Assessment Systems (CASAS) tests, whether in reading, listening, or math. Our logistic regression estimates indicate that, on average, I-BEST students had a probability of making CASAS point gains that was 13 percentage points higher than Non-I-BEST Workforce students. We estimated that the probability of achieving a CASAS test score gain was 60 percent for I-BEST students, compared with 47 percent for Non-I-BEST Workforce students. ABE/GED I-BEST students had, on average, a probability that was 12 percentage points higher than ABE/GED Non-I-BEST Workforce students. For I-BEST and Non-I-BEST Workforce students enrolled in ESL, the respective difference was 14 percentage points.

Using PSM, we found that I-BEST students had a probability of achieving a basic skills point gain that was 17 percentage points higher than matched Non-I-BEST students. The respective probabilities for these two groups were 62 and 45 percent. Once again, the PSM and regression estimates are similar.

Conclusion

Our findings show that students participating in I-BEST achieved better educational outcomes than did those non-participating basic skills students who nonetheless enrolled in at least one workforce course in the same academic year. Using regression analysis, we found that I-BEST students were more likely than Non-I-BEST Workforce students to continue into credit-bearing coursework and to earn credits that count toward a college credential. They were more likely to persist into the second year, to earn educational awards, and to show point gains in basic skills testing. On all of the outcomes we considered, I-BEST students did better than Non-I-BEST Workforce students. Moreover, the apparent gains in educational benefits were reaped by I-BEST students who enrolled in either ABE/GED or ESL.

We also found that I-BEST participants did better on all outcomes considered compared to a group of basic skills students who were matched to the I-BEST students using propensity score matching. Using PSM, the probability that I-BEST students earned at least one college credit over the two-year tracking period was 90 percent, while the probability for the matched students was 67 percent, a 23 percentage point difference. The probability of earning an occupational certificate was 55 percent for I-BEST students, compared with only 15 percent for the matched group.

While we cannot formally compare the results from the regression and propensity score matching analyses, the fact that the two methods produced similar results increases our confidence in the robustness of the findings. Both methods account for observed differences between the treated (I-BEST) and comparison groups, but neither can control for selection bias that may be due to unobserved differences between the groups. Some of these unobserved differences are likely related to the selection process, which we only partly understand. Thus, while the results indicate that participation in I-BEST is *correlated* with better educational outcomes over the two-year tracking period, it is important to note that they do not provide definitive evidence that the I-BEST program *caused* the superior outcomes. It could be that, because of the way students were selected into the program, those who participated were more motivated or had other characteristics not measured in this study that made them more likely to succeed.

CCRC plans to conduct further research to better understand the process by which students are selected into I-BEST. CCRC will also extend this study in at least three ways: first, by examining degree attainment and labor force outcomes of I-BEST students over a longer time period; second, by collecting financial data to estimate program cost-effectiveness; and third, by examining the practices of particular I-BEST programs that produce superior outcomes.

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