Evaluation of Programs Funded by Technology-Based Learning (TBL) Grants

May 30, 2013

Nan Maxwell
Samina Sattar
Dana Rotz
Kate Dunham (Social Policy Research Associates)

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200 Constitution Ave., NW
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Project Officer: Michelle Ennis

Submitted by:
Mathematica Policy Research
505 14th Street, Suite 800
Oakland, CA 94612-1475
Telephone: (510) 830-3700
Facsimile: (510) 830-3701
Project Director: Nan Maxwell

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DISCLAIMER

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LIST OF ACRONYMS

AA	Associate of Arts degree
A-DA	Able-Disabled Advocacy
ADN	Associate Degree in Registered Nursing
AJC	American Job Center, formerly known as One-Stop Career Center
AS	Associate of Science degree
BA	Bachelor of Arts degree
BS	Bachelor of Science degree
CATS	Care and Training Supports program at The Guidance Center
CDL	Commercial driver's license
CIM	Computer Integrated Manufacturing Certificate
CNA	Certified nursing assistant
CSN	College of Southern Nevada
DOL	U.S. Department of Labor
EAP	Expanded Access Program
ESL	English-as-a-second-language
ETA	Employment and Training Administration
FPO	Federal project officers
GCPI	Geospatial Career Pipeline Initiative Career Studies Certificate in GIS at Northern Virginia Community College
GCSC	Gulf Coast State College (formerly known as Gulf Coast Community College)
GED	General educational development credential
GEM	Global Energy Management program at the University of Colorado, Denver
GTC	Greenville Technical College
HCC	Hillsborough Community College
HS	High school
IDCEO	Illinois Department of Commerce and Economic Opportunity
INP	Integrated Nursing Program at Madisonville Community College
IT	Information technology
LMS	Learning management system
LPN	Licensed practical nurse
LVN	Licensed vocational nurse
MAP-RN	Multi-State Approach to Preparing Registered Nurses program at Western Governors University
MCC	Madisonville Community College
MDL/MUP	Microsoft Digital Literacy and Microsoft Unlimited Potential training
n.a.	Not applicable
NA	Not available
NCTC	North Central Texas College

NOVA	Northern Virginia Community College
OC WIB	Orange County Workforce Investment Board
OWATC	Ogden-Weber Applied Technology College
PC	Personal computer
PhD	Doctor of Philosophy
PHN	Public health nurse
Reno CSA	Reno Community Services Agency
RF SUNY	The Research Foundation of State University of New York
RN	Registered nurse
TBL	Technology-based learning
Temple CSPCD	Center for Social Policy and Community Development at Temple University
TGC	The Guidance Center
UCD	University of Colorado Denver
WIA	Workforce Investment Act
WIB	Workforce Investment Board
WGU	Western Governors University
WTCC	Wake Technical Community College
WVUP	West Virginia University at Parkersburg

EXECUTIVE SUMMARY

Workforce development might be particularly well suited to using technology-based learning (TBL) as a basis for training. TBL can be more flexible than traditional classroom training in timing, pace of learning, and course length, and such flexibility might help programs address the training needs of a diverse set of people. The potential for TBL to expand access to training and increase the number of trained workers in high-growth, high-demand occupations led the Employment and Training Administration (ETA) of the U.S. Department of Labor (DOL) to launch the TBL initiative in 2006 and, after several small TBL projects showed promise, to provide $10 million in funding to 20 grantees in 16 states to develop and implement TBL projects over a three-year period, from 2009 to 2012.

This study builds on previous evaluations of TBL programs commissioned by ETA and describes program participants, their program satisfaction, and education and labor market outcomes. It addresses the general question, *How are students in workforce training programs served by TBL programs?* using two main data sources: (1) administrative data for 14,968 participants in TBL programs (through fall 2012), including participant characteristics and outcomes; and (2) survey data on program satisfaction from 710 program participants responding to a survey (51 percent response rate) administered to a sample of TBL participants from all 20 grantees in fall 2011 and fall 2012. Even though results of the research cannot be interpreted causally, the study provides a glimpse into the participant outcomes of TBL programs.

Results of the study suggest that grantees offered TBL programs that served a diverse set of participants, built learning communities to support them, had high levels of program satisfaction, and produced positive education and employment outcomes. Programs provided participants with flexibility by allowing them to combine building workplace skills with other aspects of their lives, which was a key motivator for choosing a technology-based format rather than a traditional classroom format. Programs appeared to provide adequate support to participants for using the technology needed to undertake and complete programs and to balance the individualization of courses with their desire to be part of a larger learning community.

Still, challenges remain in recruiting participants and structuring programs. Students in the average TBL program fit the typical gender, race, and age profile for students in online programs throughout the country. Furthermore, programs did not break a "glass ceiling" for the low-skilled and unemployed. A majority of program participants were employed upon enrollment, and more than 98 percent had at least a high school diploma or a GED credential. In addition, participants with only a high school education were more concentrated in shorter programs that did not offer a credential or that offered a certificate instead of a license or degree.

Programs might benefit from a greater focus on outcomes. Less than half of survey respondents felt the knowledge they acquired in their TBL training program would help them advance in their career. This suggests that programs may need to evaluate their goals and determine whether they are offering content that has enough depth or relevance to add value for people in the workforce. However, programs might not have the data to undertake such a process. When Mathematica asked for (ETA-required) information on their program participants, only 2 grantees (of 20) could provide the data and key information for examining participants, and their outcomes were available for only 35 percent of participants.

Brief Overview of Findings

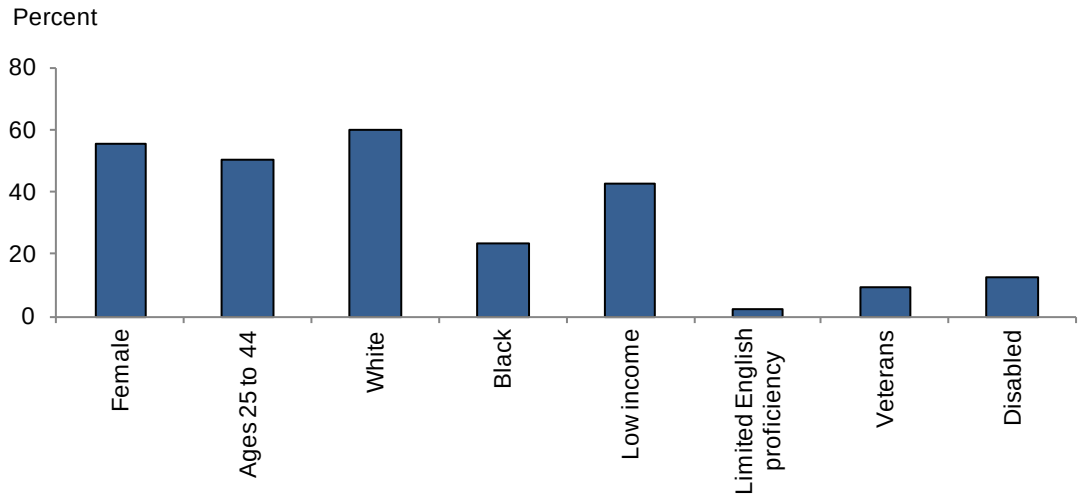
The study used descriptive and multivariate statistics to analyze the TBL administrative and survey data collected. Descriptive methods provided an aggregate analysis of TBL participants and a stratified analysis for three key program characteristics: (1) TBL instructional model (online, in-class, and blended); (2) type of credential offered (none, certificate, license, degree, and multiple); and (3) program duration. Multivariate regression methods (ordered and binary probits and ordinary least squares) built on the descriptive analysis to examine associations between program outcomes (satisfaction, education, and labor market) and participant, program, and labor market characteristics. All analysis was weighted to represent the average participant in the average TBL program.

The study sequentially answered three questions developed to address the primary research question. Next, we summarize the results of the analysis that addresses each question.

1. What were the characteristics of participants in TBL programs?

The TBL programs served a demographically diverse set of people (Figure 1). More than half were female and age 25 to 44 (56 percent and 51 percent), and over 60 percent were white. About 43 percent were low income. Few participants (2 percent) were English learners. Veterans accounted for 9 percent of the population, and people with a disability for 13 percent. Slightly more than half (56 percent) were employed—either part- or full-time—when enrolling in a TBL program, with about 85 percent of participants in online-only programs employed at enrollment. Most (87 percent) of those employed at enrollment were enrolled in a degree program.

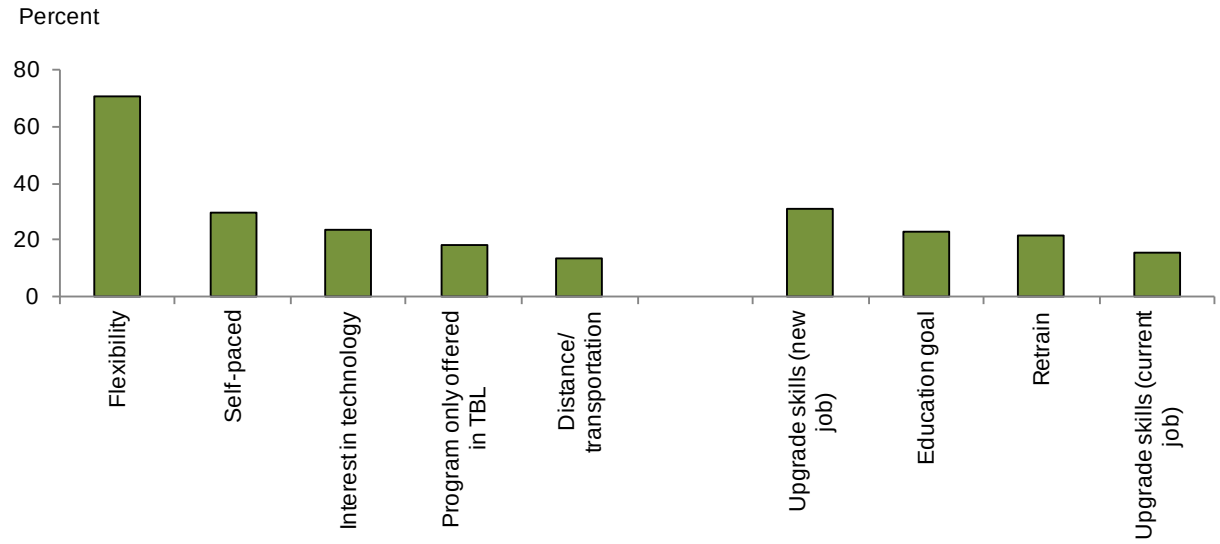
Figure 1. Characteristics of TBL Participants



Source: Administrative data.

Flexibility appeared to be a key motivator for participants in choosing a technology-based format rather than a traditional classroom (Figure 2). Seventy-one percent of survey respondents cited flexibility with life responsibilities as a reason for choosing TBL over traditional instruction, and 30 percent reported a preference for self-paced instruction.

Figure 2. Reason for Enrolling in a TBL Program



Source: Participant survey.

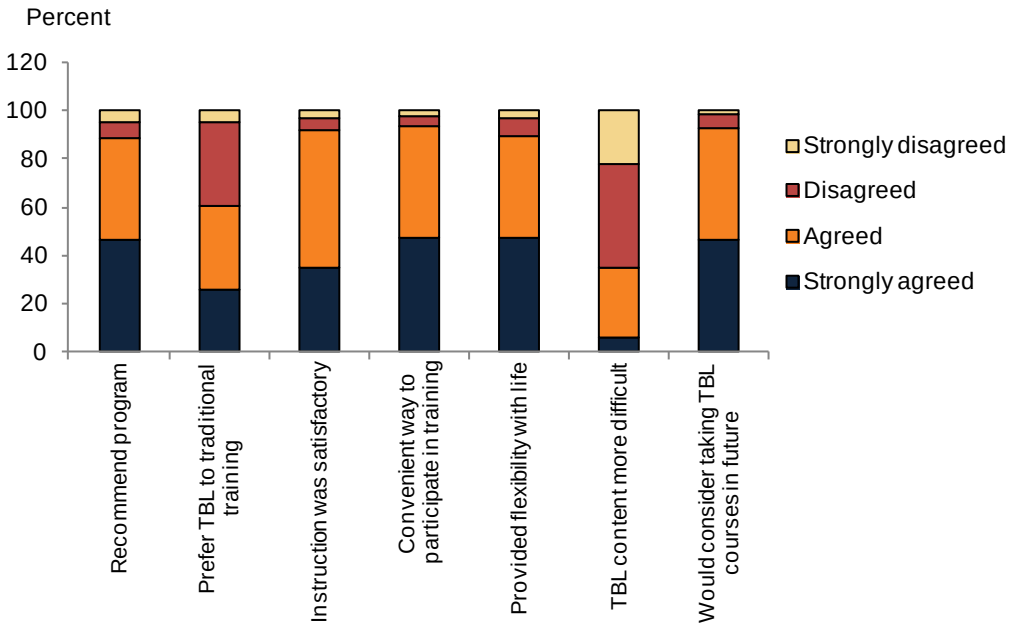
Some participants enrolled in the TBL programs to develop their skills (Figure 2). Nearly one-third (31 percent) wanted to upgrade their skills for a better job or to reenter the workforce. About 22 percent wanted to train for a completely new career path or to attain a higher education, and about 16 percent wanted to upgrade skills for their current job.

Despite the heterogeneity of TBL participants, programs seemed to create strong learning communities. More than 60 percent of survey respondents reported in-person and remote contact with other students and their instructor at least weekly. Programs also offered support services to build general workplace skills. About one-third of survey respondents said their program offered assessments of computer skills or career interests or offered resume writing, interviewing, and workplace behavior classes. More than one-fifth said their programs offered career counseling, job market information, and job placement assistance.

2. How satisfied were participants with their experience in the TBL program?

Participants expressed high levels of satisfaction with their programs. Nearly three-quarters of survey respondents said they were satisfied with their program, with more than 40 percent saying they were very satisfied. Less than 10 percent reported being dissatisfied. Furthermore, as Figure 3 shows:

Figure 3. Satisfaction with TBL Programs



Source: Participant survey.

- Nearly 90 percent would recommend their program to others who might be looking for a similar learning opportunity.
- About 60 percent said that online or TBL was preferable to traditional classroom training.
- More than 90 percent said their TBL instructor was satisfactory.
- More than 90 percent said their TBL program was a convenient way to participate in training and that it provided flexibility with their lives.
- More than 90 percent would consider taking another TBL course in the future.
- Only 35 percent found online or TBL content more difficult to understand than that in traditional classrooms.

Still, disparities appeared to exist in the levels of satisfaction. The multivariate analysis shows that satisfaction differed by:

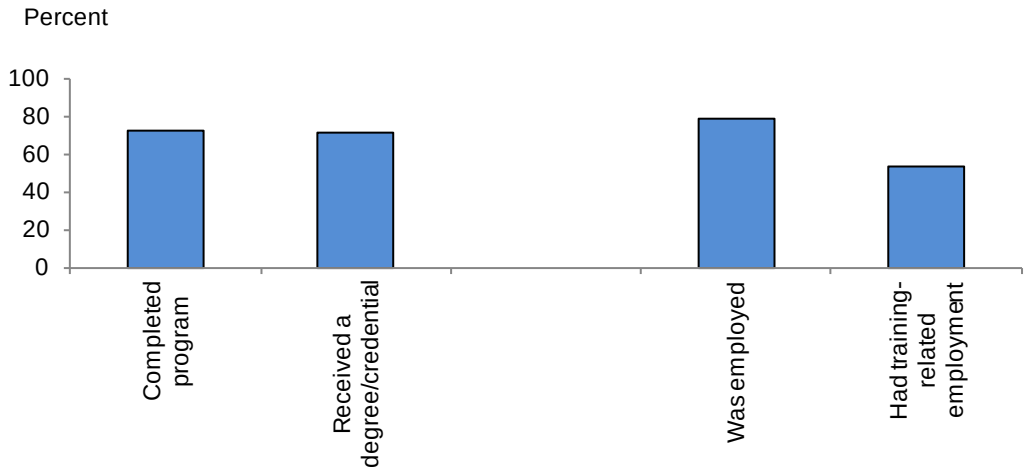
- **Demographic characteristics.** The least educated and younger participants were significantly less satisfied than other participants with program technical support and their learning community, and blacks and people of races other than black or white rated their learning community and the TBL portion of their program higher than did whites.
- **Propensity to enjoy TBL.** Participants with previous TBL experience and those who enrolled in TBL because of its flexibility or their preference for self-paced instruction expressed higher levels of satisfaction.

- **Program characteristics.** Satisfaction with one's learning community was stronger in blended programs than in online-only or classroom-based programs, in programs in which learning took place on one's own time, and if participants received additional career-related services (such as career counseling, job placement assistance, or skills assessment). Satisfaction was lower when participants saw their instructor less than monthly.

3. What were the participants' outcomes after the TBL program?

The educational and employment outcomes after program participation (Figure 4) suggest that TBL programs built workplace skills by integrating technologies into programs leading to a recognized credential. More than 70 percent of participants completed their program, and an equal number earned a credential—a degree, an occupational license, or a skills certificate—through their TBL program. Variation in outcomes was associated with program characteristics. Participants in online programs had dropout rates 13 percentage points lower than those in blended programs. Participants were also more likely to complete a program if they were in programs that (1) led to degrees and licenses, (2) had students remotely interact with instructors on a regular basis, or (3) offered soft-skills training. Participants in longer programs, however, were less likely to complete them.

Figure 4. Outcomes from TBL Programs



Source: Administrative data.

Positive employment outcomes were also shown (Figure 4). Programs reported that 79 percent of participants continued or secured new employment after program participation, an increase from a 56 percent employment rate before enrollment. About 53 percent of employed participants had a job in the sector of their training. Survey data suggest that workers made gains from pre- to postprogram, as about 78 percent worked full-time, up from 72 percent who reported working full-time before enrollment, and wages increased from an initial pay rate of $19.59 per hour before program participation to $21.60 per hour after participation. More than 60 percent of participants working after program participation held the same job as before program participation.

Study Limitations

Although the study provides the most thorough analysis possible of outcomes of TBL programs, as well as interesting insights into the experiences of TBL participants, interpretations of its findings are subject to several limitations. Most prominently, results cannot be interpreted to make causal inferences about the impact of participation in TBL programs on postprogram employment or credential attainment. Conclusions are based on only 20 grantees and 21 programs, and may not be generalizable beyond these grantees and programs. In addition, the administrative data contain high rates of missing information, which is discussed in Appendix A of this report.

Looking to the Future

Although this evaluation highlights the potential of TBL to expand access to training and increase the number of qualified workers available to employers, its limitations preclude drawing conclusive evidence about that potential. More rigorous research that includes valid comparison groups is needed to determine whether the value of TBL programs suggested by this study can be attributed to the TBL instructional pedagogy. Given the potential of TBL to expand the capacity of workforce development programs, this potential should be explored.

I. INTRODUCTION

As society becomes more technologically advanced, innovations in education and training help keep America's workforce competitive in an increasingly global economy. Vocational training and certification might be particularly well suited to using these innovations. Technology-based learning (TBL), or e-learning, can be more flexible than traditional classroom training in timing, pace of learning, and course length. It might be attractive to nontraditional, adult students and people whose options for learning are limited because of work, other responsibilities, or geographic location. The increased pervasiveness of computers and access to the internet among students and instructors make TBL extremely relevant as a workforce training strategy. These factors can expand access to training and increase the number of qualified workers available to employers. TBL could be particularly important for high-growth, high-demand occupations that need workers with specific, often unavailable, skills.

The potential of TBL led the Employment and Training Administration (ETA) of the U.S. Department of Labor (DOL), to launch the TBL initiative in 2006. The goal was to promote the use of technology in workforce training and to encourage the development of a national strategy for advancing TBL, broadly defined as "learning via electronic technology," using a computer or another electronic device. The initiative started as a pilot in a few select states. Because those initiatives were promising, in June 2008, ETA released a Solicitation for Grant Applications (SGA) to provide $10 million in funding for TBL projects.[1] In January 2009, ETA awarded grants to 20 organizations in 16 states to develop and implement TBL projects over a three-year period, from 2009 to 2012. Grants were used to create new TBL programs or courses, or to improve and expand existing ones. Each grantee focused on one high-growth industry; the most common industries represented were health care and information technology (IT).

This study, sponsored by ETA, provides a detailed analysis of participants enrolled in those programs and addresses the general question: *How are participants in workforce training programs served by TBL programs?* The analysis is based on two main data sources: (1) administrative data for participants in the programs offered by the 20 TBL grantees between 2009 and 2012, including participant characteristics and outcomes; and (2) information on program satisfaction from a survey administered to a stratified (by grantee) sample of 1,500 TBL participants.

The following sections of this chapter (1) provide additional context for incorporating TBL into workforce development programs, (2) describe the TBL grantees, and (3) summarize the structure of the overall report.

A. Potential for TBL in Workforce Development

The rapid enrollment growth in online learning courses (Sloan Consortium 2011; U.S. Department of Education 2011; Organisation for Economic Co-operation and Development 2005; American Association of Colleges of Nursing 2000) is, arguably, a testament to the potential benefits that TBL can impart for building workforce skills. Although critics of TBL have concerns about the potential for cheating on academic assessments when students are not physically present, online

[1] The SGA for the TBL initiative can be found at http://www.doleta.gov/grants/2008grants.cfm under SGA/DFA PY 08-04.

instruction has many advantages that could enhance overall learning versus more traditional approaches. First, online and distance learning can help mask personal identities and provide equal ground to individuals, regardless of race, sex, disability, or appearance. Second, asynchronous learning in online instruction can allow students more time than synchronistic learning to reflect on the materials and their responses (Aragon et al. 2002).[2] Third, the ability to access information developed using technology and stored in various formats allows students to retrieve and use information in different ways (Pulichino 2005). Perhaps as a result of these benefits, a recent meta-analysis of effectiveness research conducted by the U.S. Department of Education found that students in online learning conditions performed modestly better, on average, than students learning in traditional formats and that formats that blended online and face-to-face interaction were even more effective than purely online formats (U.S. Department of Education 2010).

Introducing technology into the training alters the nature of that environment, however, leaving instructors and students with new roles (Al-Bataineh et al. 2005). The instructor's role might become more that of a facilitator than a lecturer, and the student's role can change from active to passive learner. Because of these changes, instructors and students might have to change behaviors. Many instructors—especially those new to using technology in the classroom—require extensive support in using TBL methods effectively and in keeping their students engaged (Graham et al. 2001). Furthermore, because instruction using online and distance-learning technologies does not necessarily promote participant engagement, particularly with instructors, both instructors and students might need to learn new ways to develop interpersonal relationships, strong learning communities, and substitutions for in-person guidance and skills assessment (Swan 2002).

Arguably, the biggest advantage in integrating technology-based pedagogies into workforce training programs is the flexibility it affords. Offering courses or training that can be completed online or through distance-learning technologies without requiring the student to be at a particular location can increase (1) access to education and training for populations that would otherwise be excluded, (2) the range of people a program might serve, and (3) the ability to provide services in unexplored niches, such as just-in-time learning (training delivered to workers when and where they need it) (Larreamendy-Joerns and Leinhart 2006). These trainings might also provide expertise and resources for workers in areas of the country where in-person training is not feasible, giving more quality training opportunities to workers across the country.

If online technologies are combined with asynchronous delivery, the flexibility of the instruction expands beyond flexibility in the *place* in which the instruction occurs to include flexibility in the *pace* at which learning occurs. Asynchronous learning provides convenience and flexibility because students have access to courses and course materials 24 hours a day, seven days a week, regardless of location. This makes the online components of TBL far more flexible than the more traditional classroom style of learning. Not all TBL is completely online—indeed, much is a blend of online and in-class—and not all online TBL is completely asynchronous, but most technology-enabled pedagogies increase flexibility in learning (Bates 2005) in either place or pace.

[2] Two basic categories exist with regard to the time dimension of training delivery: synchronous and asynchronous. When instructors and learners meet at a specific time, either in person or via an online mechanism, the learning is termed *synchronous*. When learning need not occur at a specific time and is not linked to a specific learning event, it is called *asynchronous*.

The appeal of integrating technology into workforce development lies in increasing (1) access to training for participants, and (2) skills for sectors with labor shortfalls. The flexibility that online training technology affords might have particular appeal for workforce development programs that attempt to address the training needs of a diverse set of individuals (Koller et al. 2006). It can be tailored to meet the needs of people at various points in their career pathways, including youth, other new entrants to the workforce, and incumbent and dislocated workers. It might also appeal to non-native English speakers who need to work at their own pace. It can connect individuals living in rural areas who have limited access to an American Job Center (AJC) to training programs that meet their needs.[3] This flexibility also might make online programs especially well-suited to training in sectors that need to rapidly train and retrain people in new technologies, products, and services (for example, medical and health care) or that have an ever-present need for workers or skills. In addition, TBL may be well suited to developing skills consistently needed by a variety of employers or needed in rural areas.

B. TBL Grantees

From 2009 to 2012, the TBL initiative provided $10 million in grants to support 20 TBL grantees and 21 programs. The size of the TBL grants ranged from $154,018 to $969,090. Because of the broad nature of the TBL initiative's goals, TBL grantees were diverse, representing a wide range of organizations across many locations (Table I.1). The 20 TBL grantees included nine community colleges, five universities, four private nonprofit organizations (one of which was affiliated with a university), a state workforce agency, and a local workforce investment board. These grantees were based in 16 states and represent all six DOL regions. The grantees offered their programs in a variety of service areas; however, they were typically located in more urban areas. Although TBL can allow participants from remote locations to participate in training, only four grantees extended their programs outside of their home states. These programs—the Global Energy Management (GEM) program at the University of Colorado at Denver (UCD), the Integrated Nursing Program (INP) at Madisonville Community College (MCC), the TBL Worker Training Program at Dillard University, and the Multi-State Approach to Preparing Registered Nurses (MAP-RN) at Western Governors University (WGU)—expressly targeted participants who lived outside their state, and GEM even enrolled at least one international student.

[3] As of August 8, 2012, One-Stop Career Centers are called American Job Centers (http://wdr.doleta.gov/directives/attach/TEGL/TEGL_21-11_Chg1.pdf).

Table I.1. TBL Grantee Characteristics

Grantee	Location	Type of Organization	TBL Grant Funding	Program Name	Projected Number of Participants	Number of Participants Served	Percentage of Enrollment Achieved	Percentage Enrolled at AJC (estimated)	AJC Co-enrolled Program	TBL Program End Date in 2012
A-DA	San Diego, California	Nonprofit	$584,600	CareerLink TBL Program	80	102	128	75	Vocational Rehabilitation	February 1
CSN	Las Vegas, Nevada	Community college	$420,727	Associate Degree in Registered Nursing Nurse Refresher	90	474	527	NA	NA	February 1
Dillard	New Orleans, Louisiana	University	$969,090	TBL Worker Training Program	320	272	85	90 to 95	WIA Adult or Dislocated Worker	February 1
GCSC	Panama City, Florida	Community college	$499,583	Computer Integrated Manufacturing Certificate of Graduation Program	150	150	100	NA	NA	November 15
GTC	Greenville, South Carolina	Community college	$154,018	Nurse Return to Work through Technology Expansion program	300	100	33	NA	NA	February 1
HCC	Winter Haven, Florida	Community college	$498,815	TBL Project in Manufacturing Essentials and TBL Project in Manufacturing Fundamentals	650	634	98	100	WIA	June 30
IDCEO	Chicago, Illinois	State workforce department	$500,000	Microsoft Digital Literacy and Microsoft Unlimited Potential Training Programs	500	934	187	20	WIA Adult or Dislocated Worker	December 31
MCC	Madisonville, Kentucky	Community college	$425,181	Integrated Nursing Program	140	173	124	NA	NA	February 1
NCTC	Gainesville, Texas	Community college	$538,947	Online Licensed Vocational Nurse to Registered Nurse Transition Program	132	132	100	NA	NA	July 31
NOVA	Annandale, Virginia	Community college	$492,458	Geospatial Career Pipeline Initiative Career Studies Certificate in Geographic Information Systems (GIS)	355	113	32	NA	NA	February 1
OC WIB	Orange County, California	Workforce Investment Board	$500,000	Virtual Hospital: English-as-a-Second-Language for Nursing and Related Health Care Occupations	20	134	670	NA	NA	February 1
OWATC	Ogden, Utah	Community college	$500,000	TBL Information Technology Program	300	386	129	NA	NA	February 1
Reno CSA	Reno, Nevada	Nonprofit	$499,900	New Way Diesel Software Development Project	85	56	66	80	WIA Adult or Dislocated Worker	March 31
RF SUNY	Albany, New York	Nonprofit	$365,666	Public Health Nurse Ready	2,650	668	25	NA	NA	February 1
Temple CSPCD	Philadelphia, Pennsylvania	University	$695,569	TBL program in Information Technology	126	174	138	100	Wagner-Peyser	February 1
TGC	Detroit, Michigan	Nonprofit	$500,000	Care and Training Supports	1,675	9,012	538	NA	NA	February 1
UCD	Denver, Colorado	University	$502,596	Global Energy Management	192	162	84	NA	NA	February 1
WGU	Salt Lake City, Utah	University	$500,000	Multi-State Approach to Preparing Registered Nurses	1,000	222	22	NA	NA	February 1
WTCC	Raleigh, North Carolina	Community college	$383,686	Online IT Certificate program	230	971	422	NA	NA	February 1
WVUP	Parkersburg, West Virginia	University	$469,164	Expanded Access Program	360	236	66	NA	NA	February 1

Source: Dunham et al. (2011b); FPOs (funding and number of participants served during the grant period).

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used.

[a] Number projected to be served by end of grant (as of August 16, 2012,).

The number of participants served varied dramatically across grantees. ETA projected that the initiatives would enroll 9,355 total participants across all grantees. At the end of the grant period, however, the grantees reported serving 1.6 times this projection, or 15,105 participants,[4] primarily due to higher-than-anticipated enrollment at a few sites.[5] For example, the Orange County Workforce Investment Board (OC WIB) enrolled 670 percent of a projected 20 enrollees, The Guidance Center (TGC) enrolled 538 percent of a 1,675 projected enrollment, and Wake Technical Community College (WTCC) enrolled 422 percent of its 230 projected enrollment. Several other grantees did not reach their target numbers. For example, WGU enrolled only 22 percent of its projected 1,000 enrollment, RF SUNY enrolled only 25 percent of its projected 2,650 enrollment, Northern Virginia Community College (NOVA) enrolled only 32 percent of its projected 355 enrollment, and Greenville Technical College (GTC) enrolled only 33 percent of its projected 300 enrollment.

The variation in enrollment translates into the five largest grantees enrolling 81 percent of TBL participants. TGC alone enrolled more than 60 percent of the total TBL enrollment. WTCC and the Illinois Department of Commerce and Economic Opportunity (IDCEO) followed, enrolling about 7 percent each, and Hillsborough Community College (HCC) and RF SUNY enrolled another 4.5 percent each. Most grantees, however, enrolled a small percentage of the total participants, with Reno Community Services Agency (Reno CSA) enrolling the least, at less than 0.5 percent of the total (56 participants).

C. TBL Programs

The programs funded under the TBL initiative varied across several characteristics (see Table I.2 for details). This section provides an overview of the programs, as well as a look at how they differed along three main dimensions used to approach the research questions throughout the report: (1) instructional model, (2) duration, and (3) credential offered. Appendix D contains a detailed breakdown of the characteristics of each program.

Grantees used their funding for 21 TBL programs. One grantee, the College of Southern Nevada (CSN), had two distinct TBL programs: the Associate Degree in Nursing program (ADN) and the Nurse Refresher program. Two other grantees each had two "programs," but the two "programs" did not have distinct elements and were considered to be one program for this study in each case. HCC offered Manufacturing Essentials and Manufacturing Fundamentals, one being a shorter version of the other. IDCEO had two courses as part of its program: Microsoft Digital Literacy (MDL) and Microsoft Unlimited Potential (MUP) training. Participants could take one or both to complete the program, although MDL was a prerequisite for MUP.

[4]Grantees reported a slightly lower number of enrollees to Mathematica: 14,968. Although the difference in the aggregate is only 0.9 percent, differences between the number of participants reported to federal project officers (FPOs) and Mathematica varied by as much as 123 percent for one grantee. Appendix A, Table A.1 shows the differences by grantee.

[5] Enrollments beyond targets might be correlated with program characteristics. Unfortunately, examination of these correlations is beyond the scope of this study, which focuses on program satisfaction and participant outcomes.

Table I.2. TBL Program Characteristics

Grantee	Program	Program Operator	Industry	Specific Focus	Population Served or Targeted	Instructional Model	Program Duration	Credential Offered
A-DA	CareerLink	Grantee	IT	IT training and certification	People with disabilities	Blended	10 months to 1 year	Certificate
CSN	ADN	Grantee	Health care	RN training	Prior industry experience	Blended	2 years	Associate degree
	Nurse Refresher	Grantee	Health care	RN recertification	Prior industry experience	Blended	2 semesters	License renewal†
Dillard	TBL Worker Training Program	Deep South Center for Environmental Justice	Green construction	Green building and construction training (weatherization and hazardous materials)	Under- and unemployed, low-income, and dislocated workers	Blended	4 weeks	Certificate
GCSC	CIM	Grantee	Manufacturing	Computer integrated manufacturing	Incumbent worker	Blended	6 months to 1 year	Associate degree; certificate
GTC	Nurse Return to Work through Technology Expansion	Grantee	Health care	Recertification of RN and LPN	Prior industry experience	Blended	4.5 to 6 months	License renewal†
HCC	Manufacturing Essentials and Manufacturing Fundamentals	Polk Community College, Employ Florida Banner Center for Advanced Manufacturing	Manufacturing	Certified production technician training	Under- and unemployed, dislocated, and incumbent workers	Online	10 weeks	Certificate
IDCEO	MDL/MUP	TEC Services Consulting, Inc.	IT	IT training	Under- and unemployed, low-income, and incumbent workers	Blended	40 to 60 hours	Certificate
MCC	INP	Grantee	Health care	RN and LPN training	Under- and unemployed, low-income, and dislocated workers	Blended	2 years	Associate degree; license†
NCTC	LVN to RN Transition	Grantee	Health care	RN training	Prior industry experience	Blended	18 months	Associate degree
NOVA	GCPI	Grantee	IT	Geographic information systems	NA	Blended	2 years	Certificate
OC WIB	Virtual Hospital	Coastline Community College	Health care	ESL training for practicing nurses	Incumbent workers	Blended	13 weeks	None
OWATC	IT Program	Grantee	IT	IT training and certification	Incumbent workers	Blended	Up to 1 year	Certificate
Reno CSA	New Way Diesel Software Development Project	Education Design Group	IT; green technology	Development and use of a knowledge base on clean diesel conversion	Prior industry experience, under- and unemployed, and dislocated workers	Blended	12 weeks	None
RF SUNY	PHN Ready	University at Albany, SUNY, Center for Public Health Continuing Education	Health care	Introductory public health nursing training	Incumbent workers	Online	15.5 hours	Certificate
Temple CSPCD	CSPCD TBL	Grantee	IT	IT training and certification	Under- and unemployed	Blended	15 to 18 weeks per course	Certificate
TGC	CATS	Grantee	Health care	Training for mental health direct-care workers	Incumbent workers	Online	30 minutes to 3 hours	Certificate
UCD	GEM	Grantee	Energy management	Energy management	Prior industry experience and incumbent workers	Blended	18 months	Master's degree
WGU	MAP-RN	Grantee	Health care	Prelicensure RN bachelor degree	Low-income	Blended	2 years	Bachelor's degree
WTCC	Online IT Certificate Program	Grantee	IT	IT training and certification	Prior industry experience and people with disabilities	Online	Up to 1 year	Certificate
WVUP	EAP	Grantee	Health care	Certified nursing assistant training	Dislocated and incumbent workers	In-Person	9 weeks	Certificate

Source: Dunham et al. (2011b).

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used.

† The program provides a certification to be licensed, but participants must apply for their licenses from the relevant regulating body.

Most grantees designed their program to serve a specific population or set of populations and organized their recruiting efforts accordingly. Several programs shared target populations. Nine programs targeted incumbent workers, with five serving incumbent workers exclusively. Seven programs targeted unemployed and underemployed individuals, and five targeted dislocated workers. Two programs targeted people with disabilities and one did not target any specific population.

TBL grantees were encouraged to design programs that would give participants access to high-growth, high-demand industries. Health care and IT were the most common industries of focus, but grantees also created programs in green construction, green technology, energy management, and manufacturing. Even if programs targeted the same industrial sector, the specific foci within their programs varied greatly. For example, among the nine grantees targeting the health care sector, some offered a two-year degree program for registered nurses, and one offered short (30 minutes to three hours) online training modules to direct-care mental health workers.

Differences in certifications or credentials offered lead TBL programs to vary in length, from 30 minutes to two years (Table I.3). Four programs required fewer than six weeks of study. The CATS program at TGC offered at least one training course that lasted only 30 minutes, and others that took up to three hours. The shortest TBL programs offered certificates upon completion of the program. Another six programs required more time, lasting between six weeks and six months. For example, the TBL Project in Manufacturing Essentials and Fundamentals at HCC was 10 weeks long. Most of these programs also offered certificates, although the two TBL programs that did not offer any credential (Virtual Hospital and New Way Diesel) also took between six weeks and six months to complete. The remaining 11 programs were between six months and two years long, and offered a mix of certificates, certificates that qualified participants for licenses, and degrees. For example, the GEM program at UCD offered a master's degree in energy management.

Table I.3. TBL Grantees and Programs, by Program Duration

	Program
0 to 6 Weeks	
Dillard	TBL Worker Training Program
IDCEO	Microsoft Digital Literacy and Microsoft Unlimited Potential Training Programs
RF SUNY	Public Health Nurse Ready
TGC	Care and Training Supports
6 Weeks to 6 Months	
GTC	Nurse Return to Work through Technology Expansion Program
HCC	TBL Project in Manufacturing Essentials and TBL Project in Manufacturing Fundamentals
OC WIB	Virtual Hospital: English-as-a-Second-Language for Nursing and Related Health Care Occupations
Reno CSA	New Way Diesel Software Development Project
Temple CSPCD	TBL program in IT
WVUP	Expanded Access Program
6 Months to 2 Years	
A-DA	CareerLink TBL Program
CSN	Associate Degree in Registered Nursing
CSN	Nurse Refresher
GCSC	Computer Integrated Manufacturing Certificate of Graduation Program
MCC	Integrated Nursing Program
NCTC	Online Licensed Vocational Nurse to Registered Nurse Transition Program
NOVA	Geospatial Career Pipeline Initiative Career Studies Certificate in Geographic Information Systems (GIS)
OWATC	TBL IT Program
UCD	Global Energy Management
WGU	Multi-State Approach to Preparing Registered Nurses
WTCC	Online IT Certificate program

Source: Dunham et al. (2011b).

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used.

As a condition of receiving TBL funding, ETA required that, at a minimum, each TBL program must (1) develop innovative technology-based elements that could be shown to work toward achieving the TBL initiative's goals (discussed previously on page 1); (2) provide effective user support for all clients, including those from underserved populations and individuals with low levels of computer and technical proficiency; (3) lead to recognized credentials; and (4) make use of existing demand-driven strategic partnerships. The following describes how the grantees designed their programs to meet these four requirements.

For the first requirement—to develop innovative technology-based elements—programs chose an instructional approach that fit the objectives of their specific program (Table I.4). Four programs used online instructional delivery only, making it easier for participants who could not attend an in-person class (for example, because of a demanding work schedule or lack of transportation) to access courses. These programs typically combined recorded or live-broadcast lectures with electronic course materials. The Expanded Access Program (EAP) at WVUP was the only program to use a completely classroom-based approach, where lectures were broadcast to the classroom via videoconferencing.[6] Sixteen programs used a blended approach, combining in-person and online instruction or training. For example, in A-DA's CareerLink TBL program, students were required to complete one online training module per week and attend biweekly in-person classroom sessions.

Table I.4. TBL Grantees and Programs, by Instructional Model

Grantee	Program
Online Only	
HCC	TBL Project in Manufacturing Essentials and TBL Project in Manufacturing Fundamentals
RF SUNY	Public Health Nurse Ready
TGC	Care and Training Supports
WTCC	Online IT Certificate program
Classroom-Based	
WVUP	Expanded Access Program
Blended	
A-DA	CareerLink TBL Program
CSN	Associate Degree in Registered Nursing
CSN	Nurse Refresher
Dillard	TBL Worker Training Program
GCSC	Computer Integrated Manufacturing Certificate of Graduation Program
GTC	Nurse Return to Work through Technology Expansion Program
IDCEO	Microsoft Digital Literacy and Microsoft Unlimited Potential Training Programs
MCC	Integrated Nursing Program
NCTC	Online Licensed Vocational Nurse to Registered Nurse Transition Program
NOVA	Geospatial Career Pipeline Initiative Career Studies Certificate in Geographic Information Systems (GIS)
OC WIB	Virtual Hospital: English-as-a-Second-Language for Nursing and Related Health Care Occupations
OWATC	TBL IT Program
Reno CSA	New Way Diesel Software Development Project
Temple CSPCD	TBL program in IT
UCD	Global Energy Management
WGU	Multi-State Approach to Preparing Registered Nurses

Source: Dunham et al. (2011b).

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used.

[6] Licensing requirements and limited access to high-speed internet connections in rural areas prevented WVUP from delivering instruction online, but it was able to use videoconferencing technology to reach students in remote rural areas.

For ETA's second key requirement—to provide effective user support to all clients— grantees provided participants with personal technical support from program staff, instructors, or dedicated help desks, as well as built-in support within the learning management systems (LMS) (Dunham et al. 2011b). Participants could call or email support staff with questions about technology use or get help from staff members at in-person sessions. Many programs also tried to ensure that participants had access to computers or technology required for their online program activities through admission to on-site or partner computer labs, or by providing computer hardware and software for personal use.

To satisfy ETA's third key requirement—for programs to lead to recognized credentials—the TBL programs offered various types of credentials, from individual course certificates to degrees (Table I.5 lists programs by credential offered). Twelve programs offered occupational skills certificates to those who completed the program and eight led to occupational skills licenses. Of note, three programs (CSN, GTC, and MCC) provide a certification to be licensed, but participants must apply for their licenses from the relevant regulating body. Six programs offered postsecondary educational degrees: four programs offered an associate's degree, one a bachelor's degree, and one a master's degree. Two TBL programs (OC WIB and Reno CSA) did not lead to a recognized credential, meaning the programs did not provide training that met the standards or requirements for a particular credential. OC WIB's program was designed to help nurses who were English-language learners, and Reno CSA's program was developing an energy knowledge base.

Table I.5. TBL Grantees and Programs, by Credential Offered

Grantee	Program
No Credential	
OC WIB	Virtual Hospital: English-as-a-Second-Language for Nursing and Related Health Care Occupations
Reno CSA	New Way Diesel Software Development Project
Certificate	
A-DA	CareerLink TBL Program
Dillard	TBL Worker Training Program
HCC	TBL Project in Manufacturing Essentials and TBL Project in Manufacturing Fundamentals
IDCEO	Microsoft Digital Literacy and Microsoft Unlimited Potential Training Programs
NOVA	Geospatial Career Pipeline Initiative Career Studies Certificate in Geographic Information Systems (GIS)
OWATC	TBL IT Program
RF SUNY	Public Health Nurse Ready
Temple CSPCD	TBL program in IT
TGC	Care and Training Supports
WTCC	Online IT Certificate program
WVUP	Expanded Access Program
License	
CSN	Nurse Refresher
GTC	Nurse Return to Work through Technology Expansion Program
Degree	
CSN	Associate Degree in Registered Nursing
NCTC	Online Licensed Vocational Nurse to Registered Nurse Transition Program
UCD	Global Energy Management
WGU	Multi-State Approach to Preparing Registered Nurses
Multiple Credentials	
GCSC	Computer Integrated Manufacturing Certificate of Graduation Program (Degree and Certificate)
MCC	Integrated Nursing Program (Degree and License)

Source: Dunham et al. (2011b).

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used.

To satisfy ETA's fourth requirement—to make use of existing demand-driven strategic partnerships—grantees formed partnerships with employers, public workforce agencies, and other organizations to design and implement their TBL programs (Dunham et al. 2011b). Employers were a major focus for programs and provided expertise in training content and industry needs; some offered additional funding and employment or internship opportunities for participants. For some programs, local workforce agencies participated on program advisory boards and had formal agreements with grantees. Partnerships with educational institutions, unions, and other government agencies widened the pool of applicants and access to additional wraparound services.

D. Previous Evaluations of TBL Programs

In June 2008, ETA competitively awarded a contract to Social Policy Research Associates (SPR) to evaluate the programs funded by the TBL grants. The evaluation featured collection and analysis of information collected primarily through two sets of site visits to grantees. The 6 grantees that implemented their programs during the first 10 months of the grant were visited in fall 2009, and the 14 other grantees were visited during spring and summer 2010 (Dunham et al. 2011b; Dunham et al. 2011a). Results of the evaluation suggest that, despite the challenges in designing and implementing new technologies, asynchronous online training materials give some participants improved opportunity for content mastery. Program staff believed the benefits arose from participants' ability to (1) review course material as often as necessary to absorb information, and (2) participate in program activities when they felt ready to learn and not tired or distracted. Results also highlighted the elements that staff felt frequently increased the success of the TBL programs offered:

- **Developing partnerships with employers was helpful in designing, and critical in successful implementation of, the TBL programs.** Partnerships helped ensure that programs were aligned with industry needs. Partnerships also provided resources, including additional funding, physical space for lectures, work experience opportunities, and instructors. Employer partners were important sources of referrals of incumbent workers to the program. Challenges arose in recruiting employer partners, but, to make connections, programs drew on organizational partners or alumni with employer relationships and offered placement services to employers.
- **Employing instructional designers or partnering with organizations with experience in TBL methods helped in curriculum development.** Because of their regular teaching duties, instructors rarely have the time to design, implement, and test new technologies or curricula. External support that is knowledgeable in TBL curriculum development can help ensure that adequate time and diligence are devoted to the task.
- **Developing partnerships with public workforce system agencies offered benefits.** Agencies can help contextualize the local labor market and training system, provide training opportunities and other services (such as tuition and transportation assistance) to co-enrolled participants, and refer eligible participants to TBL programs.
- **Piloting or testing curricula was critical to smooth implementation.** Relying on existing curricula and materials for training content can save time in the design process, but it can also create challenges in access and compatibility of different platforms. Testing curricula, whether established or newly designed, before implementation provides the opportunity to identify and solve problems before the curricula are used with a wider audience.

- **Providing training and support to instructors—especially those new to TBL—is critical to ensuring that TBL methods are used effectively.** Online learning requires a different approach to instruction, and instructors need to be aware of the best practices of online teaching, such as dividing lectures into shorter segments and using alternative forms of communication (such as discussion boards). It is also important to provide training on using program technology, such as an LMS to house and manage TBL content.
- **Adding synchronous activities can improve interaction and engagement between instructors and students.** Asynchronous instruction can overcome the barriers of time and distance, but can also make it difficult to promote participant engagement or strong learning communities. Supplementing instruction with in-person or synchronous online interactive components such as lab sessions with hands-on activities or live presentations with question-and-answer sessions can mitigate some of these challenges. Self-motivated, independent learners did best in TBL programs, but support and opportunities for engagement can help participants who lack motivation.
- **Assessing participants' computer skills and access was instrumental in student success.** Program operators found it important to have a system to determine which students needed help accessing a computer to complete coursework or additional training in using the technology necessary for the program. Assessing and filling this need ensures that participants can access program content effectively.
- **Developing appropriate program supports facilitates effective instruction.** Providing adequate technical support to participants and instructors helped reduce technical issues during the program. Such support might include an in-person demonstration of course technology, with the option of testing the technology.

E. Structure of the Report

The rest of this report focuses on Mathematica's study of program satisfaction and outcomes. The report contains five additional chapters. Chapter II provides an overview of the research and contains the questions that guided the evaluation, the data collection and analysis, and study limitations. Chapter III presents detailed perspectives from a selection of participants on their program experiences, and offers a picture of their characteristics. Chapter IV describes participants' satisfaction with their TBL programs and components of their programs. Chapter V discusses participant outcomes after participating in the program, and Chapter VI discusses the study's results, including the lessons learned from participant experiences.

The main body of the report is followed by four appendices, each of which provides additional details on one aspect of the study. Appendix A provides details of the data collection, both administrative and participant survey data, and discusses missing data in each data source. Appendix B provides details on the different samples constructed for the analysis and the weights that were developed to help ensure the statistics represent the characteristics or experience of the average participant in the average TBL program. Appendix C provides a copy of the survey instrument and a survey notification letter sent to participants. Appendix D provides a brief, one-page description of each TBL grantee, as well as summary tables of grantee characteristics and participant characteristics by grantee.

II. OVERVIEW OF THE STUDY

This study complements the SPR evaluation by focusing on participants (Dunham et al. 2010a; Dunham et al. 2011b) in TBL programs, in contrast to that evaluation's focus on program attributes. This research provides information on participant education and employment outcomes, characteristics, and (for a sample of participants) satisfaction with the program services received. The report also discusses key program and participant characteristics that might be associated with participant satisfaction and positive labor market outcomes, to help guide future development of TBL programs or inform changes to existing ones.

This chapter describes the approach used to address the primary research question asked by ETA: *How are students in workforce training programs served by TBL programs?* It also describes the methodology Mathematica used to collect and analyze the data in the study, as well as limitations of the data and analysis. The descriptions of methods in this chapter are general, with the appendices providing greater detail.

A. Research Approach

This data collection and analysis focuses on answering the primary research question: *How are students in workforce training programs served by TBL programs?* To answer this question, the study addressed three secondary questions, listed below. For each question, the study examined differences in participant characteristics, satisfaction, and outcomes across different types of programs and groups of participants.

1. **What were the characteristics of participants in TBL programs?** What were the demographics, educational backgrounds, barriers to employment, and preparticipation employment of participants? What reasons did participants cite for wanting to enroll?
2. **How satisfied were participants with their experience in the TBL program?** How satisfied were participants with the types of services and support received, ease of use of TBL tools, and quality of instruction and training? Was satisfaction with the program associated with participant or program characteristics?
3. **What were the participants' outcomes after the TBL program?** What were the program completion rates, time in training, certification, and credential attainment? What were the postprogram employment rates, sectors, and wages? Were outcomes associated with participant or program characteristics? Were outcomes different for participants employed before the program than for participants not employed before the program?

B. Data Collection

Mathematica collected administrative and survey data to address the research questions. Participant-level administrative data were collected from grantees on characteristics and outcomes for all TBL participants, and survey data on program satisfaction were collected from a stratified (by program) sample of TBL participants. The data sources provided complementary sets of information and enabled the study team to address both general and targeted questions about the experience of TBL programs and participants. The following sections provide more detail on each of these data sources.

1. Data Collection: Administrative Data from TBL Grantees

Administrative data were collected from all 20 TBL grantees and 21 TBL programs on 14,968[7] participants enrolled in programs through fall 2012. Unfortunately, few grantees could provide a complete set of information on data requested for their program participants. In many cases, grantees did not collect certain data elements from participants; in others, the elements were not collected consistently for all participants in a program (see Appendix A for more information). Of the 14,968 people grantees said were enrolled in TBL programs from January 1, 2009, through the program end dates listed in Table I.1, only 5,774 participants (33.5 percent) had complete administrative information on seven key variables. Only 1.2 percent of participants had complete information on all data elements requested. Administrative data were used to (1) provide information to field the participant survey, (2) describe participants in TBL programs, and (3) assess program outcomes. Mathematica requested four types of information from grantees, each with a different purpose for the evaluation, as described in Table II.1.

Table II.1. Administrative Data Elements

Information Type	Specific Elements Collected	How Data Were Used
Participant Contact Information	Name Contact information	To contact program participants for surveying
Program Participation	Date started and exited program Name of TBL grantee and program Date started and completed training program	To identify program participants to include in the sampling frame
Participant Characteristics	Date of birth Gender Race/ethnicity Low income Limited English proficient Veteran status Disability status Education Employment status	To describe the types of participants enrolled in TBL programs
Participant Outcomes	Degree, credential, or certificate Attained (and name) Date degree, credential, or certificate attained Entered unsubsidized employment (yes, no) Date entered unsubsidized employment Entered training-related employment (yes, no) Date entered training-related employment Industry sector of employment	To describe how participants fared after leaving TBL programs

Source: Administrative data from TBL grantees.

2. Data Collection: Participant Survey

Mathematica administered a survey to a stratified (by program) sample of 1,500 TBL program participants. The sampling frame was designed to target participants in programs in 2010 and to ensure the sample included participants from all programs. The survey had a 50.6 percent

[7] The number of TBL participants reported in the administrative data (14,968) is 0.9 percent less than the number reported by grantees to their regional FPO (15,105). Appendix A compares the enrollment numbers for each grantee.

unweighted response rate and yielded 710 completes.[8] The survey data were used to (1) describe participants' preprogram experiences, (2) describe the types of activities participants took part in during their program, (3) measure participants' satisfaction with program components, and (4) assess program outcomes. The survey collected five types of information from survey respondents, each with a different purpose for the evaluation, as described in Table II.2.

Table II.2. Survey Data Elements

Information Type	Specific Elements Collected	How Data Were Used
Preprogram Characteristics	Prior experience with online programs Preprogram internet skill level Highest grade completed Reason enrolled in TBL Paid employment at enrollment Possibility of becoming unemployed Full-time or part-time work Hours worked per week Hourly wage rate	To describe the types of participants enrolled in TBL programs in more depth
Preprogram Employment and Education	Highest level of school completed Paid employment at enrollment Possibility of becoming unemployed Full-time work at time of enrollment Hours worked per week Hourly wage rate	To describe the types of participants enrolled in TBL programs in more depth
Program Activities	Industry sector of training Length of training Hours in program per week Use of computers Instructional time Peer interaction Remote instruction/interaction Technical support Program structure Other services received Program completion Reasons for noncompletion Credential received (and name) Number of credentials	To describe the program experience from the perspective of TBL participants
Program Satisfaction	Overall satisfaction Whether learned something new Whether new skills attained Career goals Future TBL use Preference for traditional learning Recommend program Satisfaction with services received	To measure participant satisfaction with program components
Postprogram Outcomes	Paid employment Full-time or part-time employment Hours worked per week Wages Entered industry sector consistent with training Job same as pretraining job	To describe in more depth how participants fared after leaving TBL programs

Source: Participant survey.

[8] Because Mathematica sampled participants for surveying for four grantees, it calculated a weighted response rate to show the percentage of the target population represented by survey respondents. It stood at 33.7 percent.

3. Weighting

Because participants in the analysis differ from those in the population of all TBL participants (Appendix B), the results of the research might not represent the characteristics, satisfaction, or outcomes of the overall TBL population without applying weights to apportion the sample to the TBL population. All samples in this report (except in some appendices) were reweighted so they represent the characteristics or experience of the average participant in the average TBL program. After weighting, the distribution of individuals across grantees is identical for the TBL population and the survey respondent sample, the two main data sets used in this analysis. All tables in Chapters II to V present this weighted analysis, although unweighted sample sizes are reported.

C. Data Analysis

Descriptive and multivariate statistics are used to analyze the administrative and survey data to address each of the study's research questions. Descriptive statistics present sample characteristics in averages or proportions, or summarize responses to questions in the aggregate and by program characteristics and subpopulation (as discussed below). An *f*-test determines whether statistically significant ($p \leq 0.05$) differences exist in the distribution of characteristics between groups, and a two-tailed *t*-test determines statistically significant differences between groups for characteristics or outcomes with a single category.[9] A dagger (†) is used in the tables to indicate statistically significant differences in distributions (*f*-test) and a single asterisk (*) to designate statistically significant differences in a single characteristic or outcome (*t*-test).

All descriptive analyses are presented in the aggregate for all programs and stratified by three key program characteristics. Two characteristics were pedagogical requirements for receiving a TBL grant: (1) TBL instructional model (online, in-class, and blended); and (2) type of credential (none, certificate, license, degree, and multiple). The third characteristic, program duration, is examined to determine whether longer programs were less effective in online settings. Programs were classified based on the grantee's description (Dunham et al. 2011b), as shown in Tables I.3 to I.5. Although participants might view programs in a different way from grantees, survey data suggest that these categories of programs have distinct characteristics that roughly correspond to the classifications by grantees (Table II.3). For example, 56 percent of participants in online programs said the format of their program involved working on their own without an instructor, compared to 16 percent of the students in the classroom-based program and 27 percent of students in blended programs. Respondents in the survey indicated that programs in which participants worked on their own without an instructor often were shorter and led to a license or degree.

[9] Although the administrative data were designed to contain the population of TBL participants, the high level of missing data render it a sample rather than a population, As a result, statistical tests are performed on samples, not on a population (see Appendix B for discussion).

Table II.3. Format for Online or Technology and Program Characteristics, as Reported by Survey Participants

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**710**	**185**	**45**	**480**	**241**	**202**	**267**	**20**	**486**	**49**	**112**	**43**
Scheduled Session with Instructor	16.1	16.3	47.5*	14.1*	21.0	26.4*	7.9*	13.9	24.8*	0.0*	2.4*	5.6*
Working on Own Without Instructor	37.6	56.3*	12.5*	34.2*	52.3*	20.9*	41.9	11.1*	36.8	63.1*	51.6*	28.0
Combination of Both	46.3	27.4*	40.0	51.7*	26.8*	52.7	50.2	75.0*	38.4*	36.9	46.1	66.4*

Source: Participant survey.

Note: Data were weighted to capture the characteristics of the average participant at the average grantee's TBL program. All numbers reflect percentages unless stated otherwise.

* The difference between the total and sample is significantly different at the $p \leq 0.05$ level, two-tailed t-test.

Descriptive statistics for program satisfaction were also used to analyze differences between participant subgroups. Disaggregated statistics are presented in the report for subgroups meeting two criteria: at least 65 percent of the participants had information on the characteristics, and at least 10 percent of the participants have the characteristic. Five characteristics met these criteria: (1) age, (2) gender (male and female), (3) race (black and white), (4) preprogram employment, and (5) preprogram education.

Although the study design does not allow estimation of the impacts of the TBL initiative on participants, standard multivariate techniques (ordinary least squares [OLS] regression and probit analyses) help determine the presence of statistically significant associations between participant and program characteristics and program satisfaction and outcomes.[10] The exact specifications of the multivariate analysis are discussed in Chapter IV (satisfaction) and Chapter V (outcomes).

D. Study Limitations

Although the study provides the most thorough analysis possible of outcomes of TBL programs, as well as interesting insights into the experiences of TBL participants, its interpretations of its findings are subject to several limitations.

First, results cannot be interpreted to make causal inferences about the impact of participation in TBL programs on postprogram employment or credential attainment. Differential selection, for example, could mitigate the relationship between program characteristics and outcomes. If individuals are behaving in a rational way, they will enroll in the program that gives them the most benefits (net of costs). That is, blended programs should yield better outcomes for those who choose to enroll in blended programs compared to those who choose otherwise. Thus, one should be careful in concluding that one type of program should be universally supported over others.

Second, missing data is a problem in both the administrative and survey data sets. The administrative data collected from the grantees included complete information on key data elements for only 33.5 percent of the participants. Survey data also were not universally complete (50.6 percent response rate). If non-reporting through missing data is not random, results will be biased.

[10] The high levels of missing data in the administrative data precluded using only those data.

For example, suppose all individuals with missing data on gender were male. Given that the coefficients on both female and gender missing are negative in the regression predicting program completion, one could conclude that females were less likely to complete a program than males (the omitted category). But if all individuals not reporting gender were male, there might not be an actual difference by gender.

Third, as with all survey data, the accuracy and reliability of responses are subject to the respondent's ability to accurately recall information and to interpret the questions in the manner intended. Particularly for respondents who have been out of the program for a long time, responses to questions about their experience with the program might be biased by their recent experiences or based on limited memory of their experience. For example, a respondent's overall satisfaction with the program may be affected by whether or not they found a job or are still employed after completing the program. The survey questions were designed to minimize these biases, but because reliability tests were not conducted, it is difficult to rule out the possibility of bias in survey responses.

Fourth, conclusions are based on a relatively small number of program participants and only 20 grantees. Further, the association between some program characteristics and outcomes may be based on a single grantee. For example, classroom-based programs are demonstrated to be associated with positive outcomes but there is only a single classroom-based program in this data. Thus, one cannot determine if all classroom-based programs are effective. Instead, one can only say that the classroom-based program observed here was effective.

Fifth, it is important to note that our results are framed to look at relationships between characteristics and outcomes for an individual enrolled in the average program. The results for the average individual enrolling in TBL may be different. This is particularly important if several large programs dominate the TBL landscape.

III. TBL PARTICIPANTS

The implementation study discussed in Chapter I offers insights into how programs were designed and the types of partnerships established. This chapter uses administrative data from the grantees and survey data from program participants to view the programs through the eyes of participants (including the services participants received) and to describe the participants served. It addresses the first set of research questions, related to who was served by the TBL initiative, and provides a context in which to understand the study's findings related to the other two sets of research questions on participant satisfaction (Chapter IV) and outcomes (Chapter V).

Analysis in this chapter is grounded in descriptive statistics, both means and frequency distributions. Analysis, which is weighted to capture the characteristics of the average participant at the average TBL grantee's program, is presented in the aggregate for TBL participants across all programs and disaggregated by program characteristics (instructional mode, program duration, and credential offered). Statistically significant ($p \leq 0.05$) differences between the aggregate mean and categories of program characteristics are compared using a *t*-test (designated by a *), and significant differences in patterns of the distribution of characteristics across categories of program characteristics are compared using an *f*-test (designated by a †).

A. TBL Programs: The Participant's Vantage Point

The first two initiative requirements of TBL grantees were to (1) develop innovative technology-based elements that could be shown to work toward achieving the TBL initiative's goals; and (2) provide effective user support for all clients, including those from underserved populations and individuals with low levels of computer and technical proficiency. Previous evaluations (Dunham et al. 2011a, 2011b) examined how grantees felt they met these requirements. This research uses survey data to examine how participants viewed the technology-based elements and the services they received.

1. Technology-Based Elements

One concern frequently expressed about integrating technology into teaching and learning environments is that it does not necessarily promote student engagement in the class and strong learning communities among students. The survey of TBL participants suggests that, on average, TBL programs engendered frequent, regular contact among participants and between participants and instructors, both in person and remotely (Table III.1). Sixty-seven percent had in-person contact with other students daily or weekly, and 60 percent had in-person contact with an instructor at least weekly. More than 70 percent had remote contact with their instructor at least weekly, and more than 60 percent had remote contact with other students at least weekly. One explanation for such high levels of engagement is that, because many TBL students spent the technology-based portion of the course on their own (38 percent of the survey respondents, Table II.3), they might have sought contact with peers or instructors to compensate for the time they spent doing independent work.

Still, a sizable percentage of survey respondents said they rarely or never had contact with instructors or other students. About 30 percent said they rarely or never had in-person contact with instructors, and about 26 percent said they rarely or never had in-person contact with other students. Furthermore, about 24 percent said they rarely or never had remote contact with their instructor, and about 33 percent said they rarely or never had remote contact with other students.

Results suggest that the level of interaction might vary with the instructional model, program duration, and credential offered, as *f*-tests for difference in distributions within groupings are significant (Table III.1). Participants in online programs seem to have had lower levels of contact with instructors and other students than participants in other programs. Nearly 60 percent of survey respondents in online programs said they rarely or never had in-person interactions with their instructor (58 percent) or other students (55 percent). In contrast, only about 5 percent of students in classroom-based and 24 percent of those in blended programs said they rarely or never had in-person contact with their instructor, and about 5 percent of those in classroom-based and 19 percent of those in blended programs said they rarely or never had contact with other students. Trends are similar for remote contact, with a greater percentage of those in online programs reporting they rarely or never had remote contact with instructors (54 percent) or other students (56 percent) than those in classroom-based (30 percent with instructors, 35 percent with students) or blended (17 percent with instructors, 28 percent with students) programs. In some online programs, such as CATS, students worked remotely and asynchronously and were less likely to communicate with other students or instructors either in person or remotely. In other online programs, such as HCC's Manufacturing Essentials and Fundamentals program, lectures were broadcast synchronously using online meeting software such that students could ask questions during the lecture.

Participants in short-duration TBL programs seemed to have lower levels of contact with instructors and other students than participants in other programs. More than half of survey respondents in the shortest TBL programs (0 to 6 weeks) reported rarely or never having classes or lab sessions in-person with an instructor (52 percent) or in-person contact with other students (55 percent). In contrast, only about 23 percent of students in mid-length programs and 26 percent of those in the longest programs said they rarely or never had in-person contact with their instructor, and about 18 percent of those respondents in mid-length and 19 percent of those in the longest programs said they rarely or never had contact with other students. A similar trend is seen for remote contact, with a greater percentage of respondents in the shortest programs saying they rarely or never had remote contact with their instructor (59 percent) or other students (60 percent) than in mid-length (15 percent with instructors, 31 percent with students) or the longest (16 percent with instructors, 25 percent with students) programs.

The credential offered by the program did not seem to be related to the levels of contact with instructors and other students reported by participants. Respondents in programs that offered a certificate reported the most daily in-person interaction with instructors (24 percent) and students (28 percent), compared to respondents in other programs. They were also the ones to most frequently say that they never interacted in person with their instructor (26 percent) or fellow students (24 percent) and were the most likely to say they never had remote contact with instructors (21 percent) or students (30 percent).

Table III.1. Instructor and Student Interaction as Reported by Survey Respondents (percentages unless noted otherwise)

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**710**	**185**	**45**	**480**	**241**	**202**	**267**	**20**	**486**	**49**	**112**	**43**
Frequency of In-Person Meetings/Contact												
Classes or Lab Sections with Instructor												
Daily	15.0	6.6	47.5	15.3	34.1	10.2	10.2	0.0	23.7	6.6	4.0	7.4
Weekly	45.0	31.5	47.5	48.6	11.1	56.7	51.7	69.4	39.7	13.5	36.8	83.4
Monthly	9.6	4.2	0.0	11.7	2.6	10.0	12.2	0.0	4.2	39.5	25.0	3.6
Rarely	14.1	4.1	0.0	17.6	7.5	15.0	16.1	22.2	6.4	32.0	31.4	5.6
Never	16.3	53.6	5.0	6.9	44.6	8.2	9.8	8.3	26.0	8.3	2.8	0.0
F-test for distribution			6.1†			4.4†				3.4†		
Other Students												
Daily	23.6	12.4	47.5	25.2	35.2	23.0	19.5	25.0	28.3	9.2	16.1	18.5
Weekly	43.0	28.7	47.5	46.5	10.9	50.1	51.4	47.2	36.6	22.9	48.7	74.1
Monthly	7.7	3.7	0.0	9.2	0.8	8.5	9.9	0.0	3.9	36.7	17.6	1.8
Rarely	9.6	8.1	0.0	10.7	10.2	10.5	8.9	13.9	6.8	23.0	13.8	5.6
Never	16.1	47.0	5.0	8.4	42.8	7.9	10.4	13.9	24.4	8.2	3.7	0.0
F-test for distribution			4.6†			5.1†				2.9†		
Frequency of Remote Contact												
With Instructor												
Daily	19.3	11.5	32.5	20.6	24.2	19.2	17.4	0.0	18.8	53.9	13.0	34.9
Weekly	51.6	31.9	35.0	57.9	14.6	62.8	59.8	91.7	38.9	32.3	72.3	52.0
Monthly	4.5	3.6	2.5	4.9	2.3	2.5	6.6	0.0	5.3	5.8	3.7	5.6
Rarely	13.2	17.7	17.5	11.8	16.8	11.2	13.0	8.3	16.5	8.0	10.9	7.5
Never	11.3	35.3	12.5	4.8	42.1	4.3	3.1	0.0	20.5	0.0	0.0	0.0
F-test for distribution			9.6†			6.9†				1.2		
With Other Students												
Daily	24.8	11.7	30.0	27.9	24.4	19.0	28.4	0.0	19.4	50.5	38.4	40.3
Weekly	36.4	25.0	32.5	39.7	14.0	45.1	40.2	58.3	28.1	35.3	49.2	35.5
Monthly	5.0	7.8	2.5	4.4	1.3	5.3	6.3	2.8	5.9	4.1	2.7	7.4
Rarely	16.4	17.5	20.0	15.9	15.2	23.5	12.7	38.9	16.9	4.1	8.9	11.2
Never	17.4	38.0	15.0	12.1	45.1	7.1	12.4	0.0	29.6	5.9	0.8	5.6
F-test for distribution			6.4†			4.3†				3.0†		

Source: Participant survey.

Note: Data were weighted to capture the characteristics of the average participant at the average TBL grantee's program. Percentages reflect only participants for whom data were available.

† = $p \leq 0.05$, *f*-test.

Participating in TBL programs seemed to require a sizable effort from participants. Survey respondents reported spending an average of 21 hours per week on course activities in their TBL program, with 63 percent of students spending more than 10 hours per week (Table III.2). Course activities included time spent in class, doing assignments, or in laboratory sections. Results suggest that the time spent on program activities varied by instructional model, program duration, and credential offered. Respondents in blended programs reported spending significantly more hours (23 hours) on their program than the average TBL participant, and respondents in online-only programs reported spending significantly fewer hours (13 hours) than the average. Respondents in the programs with the longest TBL duration reported the most hours per week in course activities (25 hours); this is not surprising, because many of these programs were full-time degree programs. Respondents from short and mid-length programs reported spending about 17 hours per week on course activities. Respondents from license and degree programs reported spending the most time on course activities per week (30 hours each). Significantly less time per week was reported by respondents from programs that did not offer a credential (12 hours) and those in certificate programs (18 hours).

Table III.2. Time Spent in Program as Reported by Survey Respondents (percentages unless noted otherwise)

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**710**	**185**	**45**	**480**	**241**	**202**	**267**	**20**	**486**	**49**	**112**	**43**
Time per Week Spent on Program												
Average	21.0	12.9*	23.9	23.0*	16.7*	17.4*	24.9*	12.3*	17.6*	29.6*	30.1*	28.7
0–10 hours	36.8	60.5*	22.0*	31.5*	57.8*	49.2*	21.2*	66.7	45.7*	14.0*	14.3*	14.2*
More than 10 hours	63.2	39.5*	78.0	68.5*	42.2*	50.8*	78.8*	33.3	54.3*	86.0*	85.7*	85.8*
Number of Weeks Spent in Training												
Average	31.1	15.4*	11.0*	36.4*	8.9*	14.6*	49.4*	14.4*	21.0*	15.1*	63.5*	49.3*
0–4 weeks	14.7	38.5	10.0	8.7	48.7	8.2	5.2	5.6	21.6	10.5	5.0	7.0
5–16 weeks	41.3	46.3	85.0	37.4	40.4	68.5	25.6	66.7	48.7	63.6	10.1	22.9
17–24 weeks	6.2	4.3	0.0	7.1	3.2	5.7	7.7	0.0	5.2	13.2	6.9	12.2
25–52 weeks	17.2	5.3	5.0	21.1	6.2	17.2	21.6	27.8	15.6	12.7	17.5	17.5
More than 1 year	20.6	5.6	0.0	25.8	1.4	0.5	39.9	0.0	8.8	0.0	60.5	40.4
F-test for distribution		3.8†			23.4†			3.7†				

Source: Participant survey.

Note: Data were weighted to capture the characteristics of the average participant at the average TBL grantee's program. Percentages reflect only participants for whom data were available. Weeks spent in training are computed as the difference between the day of entry and the day of exit. The sample size refers to participants in the database who had entry and exit dates available. Estimates for survey respondents are based on the sample of 690 responses received.

* = $p \leq 0.05$, two-tailed *t*-test; † = $p \leq 0.05$, *f*-test.

The survey data provide a glimpse into how long it took participants to complete their training program, which may differ from how long the grantee reports that its program takes to complete. The official length of programs in the TBL initiative ranged from 30 minutes to two years, but participants spent 31 weeks, or about 7 months, in the average program (Table III.2). Still about 41 percent of survey respondents took between 5 and 16 weeks to complete their program, and about 21 percent took more than a year.

Time spent completing training varied by instructional model, official program duration, and credential offered. Respondents in blended programs took longer to complete the program—an average of 36 weeks, compared to 15 and 11 weeks for online-only and the classroom-based program, respectively. Most respondents in online-only programs and the classroom-based program finished their training in fewer than 16 weeks (85 and 95 percent, respectively), but only 46 percent of respondents in blended programs finished within 16 weeks. In fact, 26 percent of respondents in blended programs took more than a year to finish their training, compared to 6 and 0 percent of online-only and classroom-based programs. In what might be viewed as a confirmation of grantees' reporting of program length, respondents in the programs with the longest official length (six months to two years) reported the highest average weeks spent in training (49 weeks), and respondents in the shortest reported the lowest average weeks spent in training (9 weeks). Finally, respondents in degree programs reported spending the most weeks in training (64 weeks) on average. This was greater than the number of weeks for respondents from programs that offered multiple credentials (49 weeks), no credential (14 weeks), certificates (21 weeks), or licenses (15 weeks).

Access to computers and troubleshooting support is of primary importance for a technology-based program. A majority of survey respondents (63 percent) most often used their personal computer or laptop to access the training program (Table III.3). The second most common mode of access was a computer the training program owned (28 percent), which suggests that many TBL participants relied on the infrastructure provided by the grantee to fulfill their course requirements. The results also suggest that the type of computer used to access course materials varied by program duration. Respondents in the longest programs (six months to two years) were more likely to say they used their own personal computer or laptop to access their course (77 percent), with far fewer in short programs saying they used a personal computer (37 percent). Respondents from short and mid-length programs were more likely to use a computer the training program owned (32 and 40 percent, respectively) than those in long programs (20 percent).

Table III.3. Type of Computer Access and Program Characteristics (percentages unless noted otherwise)

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**683**	**179**	**40**	**464**	**232**	**193**	**258**	**20**	**467**	**47**	**108**	**41**
Personal computer or laptop	63.4	60.9	57.5	64.4	37.4	57.4	77.1	36.1	55.3	93.9	86.8	73.6
Work computer	5.5	22.3	0.0	1.5	21.6	0.9	2.0	0.0	8.8	0.0	1.9	3.8
Training-program owned computer	28.2	11.9	35.0	32.1	32.0	40.1	19.7	63.9	31.9	4.4	10.5	18.9
American Job Center computer	0.5	0.0	0.0	0.7	2.4	0.2	0.0	0.0	1.0	0.0	0.0	0.0
Public library computer	1.7	3.7	2.5	1.1	5.4	0.6	0.9	0.0	2.3	1.7	0.0	3.8
Other	0.5	0.0	2.5	0.5	0.7	0.4	0.5	0.0	0.5	0.0	0.1	0.0
F-test for distribution		2.2			4.4†			0.9				

Source: Participant survey.

Note: Data were weighted to capture the characteristics of the average participant at the average TBL grantee's program. Percentages reflect only participants for whom data were available.

† = $p \leq 0.05$, *f*-test.

2. Support and Services

Many TBL programs target unemployed or underemployed people and serve populations that may lack the basic skills to succeed in the workplace. Therefore, it might be important for programs to provide supplemental services that would identify individual needs, improve students' chances of completing the program, and help advance career goals. Indeed, SPR's implementation study that assessed support in TBL programs from the vantage point of grantees and program operators (Dunham et al. 2011b) showed that programs strived to provide academic and social support for their TBL participants and to develop a learning community of students and instructors. From participants' vantage point, TBL grantees ensured that opportunities and avenues existed for students to interact with other members of the learning community, offered access to computers when necessary, and provided wraparound services to meet students' individual needs.

According to responses from the participant survey, TBL grantees did provide many services to TBL participants in addition to the main educational content (Table III.4). Assessments were the most common service received, with more than one-third of survey respondents reporting receiving assessments of computer skills (37 percent) or career interests (35 percent). A relatively high proportion also received workforce preparation services, such as resume writing, interviewing, and workplace behavior classes (32 percent); career counseling (26 percent); job market information (23 percent); and job placement assistance (19 percent). Child care assistance was fairly uncommon (2 percent), as was transportation assistance (7 percent) and ESL instruction (5 percent).

Survey results suggest that the services received might vary with instructional model, program duration, and credential offered. In general, a lower proportion of respondents in online programs and a greater percentage in blended programs reported receiving support services. Participants in blended programs were more likely to report receiving assessments of computer skills (40 percent), assessments of career interests (38 percent), and career counseling (29 percent) than those in online-only programs (27, 18, and 13 percent, respectively). Although *t*-tests suggest that differences exist in the services received by participants in programs of varying duration or offering different credentials, no consistent pattern emerged along these lines.

Table III.4. Program Services Received and Program Characteristics (percentages unless noted otherwise)

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**689**	**181**	**40**	**468**	**233**	**195**	**261**	**20**	**469**	**47**	**110**	**43**
Assessment of Computer Skills	36.7	27.4*	22.5*	40.0*	42.1	30.6	38.2	22.2	42.1*	29.8	26.6*	45.8
Assessment of Vocational or Career Interests or Abilities	34.6	18.1*	45.0	38.3*	34.2	36.4	33.6	38.9	34.2	26.4	28.0	49.3
Resume Writing, Interviewing Skills, or Workplace Behavior Training/Classes	32.4	11.3*	17.5*	38.8*	29.0	36.4	31.2	52.8	28.1	39.5	31.9	31.4
Career Counseling	25.5	12.8*	20.0	29.2*	22.8	25.8	26.4	30.6	27.4	15.4	20.1	26.5
Tuition Assistance	23.6	14.3*	40.0*	25.1	11.1*	13.0*	34.8*	2.8*	25.6	4.4*	31.6	29.8
Local Job Market Information/Counseling	23.2	4.8*	37.5	27.1*	22.5	28.8	20.1	25.0	25.6	41.3*	14.8*	14.2
Job Placement Assistance	19.4	11.7*	17.5	21.6*	28.9*	14.4	18.7	5.6*	28.0*	17.1	7.8*	10.7
Regular Meetings with a Case Manager/Counselor	19.3	9.2*	12.5	22.4*	19.3	24.0	16.6	50.0	20.5	6.6*	13.1	1.7*
Basic/Remedial Math, Reading, or Writing Classes	17.4	11.8	10.0	19.3*	23.6	9.0*	20.0	8.3	18.3	4.4*	18.1	28.0
English/Math Skills Assessment	17.0	12.3	12.5	18.5	22.7	7.4*	20.4*	2.8*	19.8	2.2*	20.8	17.4
Financial Assistance for Test/Licensing Fees	15.4	6.4*	32.5*	16.8	6.8*	14.7	19.2	0.0*	22.9*	2.2*	11.1	7.0*
In-Kind Financial Assistance	8.8	3.5*	2.5*	10.6*	10.8	5.5	10.0	0.0*	11.3	13.2	8.2	3.6
Transportation Assistance	6.9	1.8	7.5	8.2	10.8	10.2	3.4	25.0	7.2	0.0*	2.1	0.0*
ESL Instruction	4.6	0.9*	0.0*	5.8*	3.3	12.4*	0.5*	36.1*	1.3*	0.0*	0.7*	0.0*
Child Care Assistance	1.9	2.8	0.0*	1.7	5.5*	0.2*	1.4	0.0*	2.3	0.0*	2.2	1.7
Other	6.3	9.4	0.0	5.8	9.7	5.9	5.1	5.6	7.8	10.5	1.6	5.3

Source: Participant survey.

Note: Data were weighted to capture the characteristics of the average participant at the average TBL grantee's program. Percentages reflect only participants for whom data were available. Respondents could select more than one category. See the list of acronyms at the beginning of the report for definitions of all acronyms used.

* = $p \leq 0.05$, two-tailed *t*-test.

B. Participants in TBL Programs

Although ETA sought to fund programs that would serve people not typically targeted by technology-based approaches, the demographic picture of TBL participants in the administrative data the grantees provided suggests that this might not be the case (Table III.5). Recent surveys of participants in online programs suggest that most online learners are female, white, and between 25 and 44 years old (Noel-Levitz, Inc. 2011; Aslanian and Clinefelter 2012). This was also true in general for the TBL initiative studied.[11] Women were a slight majority (52 percent) in the overall population of TBL participants, but the initiative did attract more men than an average online program. The administrative data show that the gender distribution of participants did vary by instructional model, program duration, and credential offered, although it seems likely that the differences might be associated with the fields in which the training was offered. For example, men tended to participate in the longer TBL programs, and some of the longer programs were in industries that tend to employ more men, such as the CIM and GEM programs in the manufacturing and energy industries.

The age distribution of participants in the TBL initiative was also typical for technology-based programs (Table III.5). The average age was 38, and half were between 25 and 44 years old (50 percent), with about 31 percent being 45 years old or older. Only 17 percent of participants were between 18 and 24 years of age. Noel-Levitz's survey of online learners reported a similar age distribution for online learners. The age distribution of participants differed by instructional model, program duration, and credential offered. TBL participants in online-only programs were slightly older on average (42 years) than participants in classroom-based (32 years) or blended (38 years) programs. Participants in the 45 years and older category were more likely to be in mid-length (45 percent) and short (39 percent) programs of six months or less than in the longer programs. They also were more likely to be in licensing programs (65 percent); this could be a result of the targeting of these programs, because both are nursing programs structured for those with prior industry experience but inactive licenses.

TBL participants were also more likely to be white, on average (60 percent), which is typical for other technology-based programs (Noel-Levitz, Inc. 2011; Aslanian and Clinefelter 2012). Black participants accounted for 24 percent of the survey respondents, and the sample included Hispanic (9 percent) and Asian/Pacific Islander (7 percent) participants. Some variation existed in the racial distribution of participants by program duration and credential offered.

[11] TBL programs also provided information on four other demographic characteristics: (1) low-income or public assistance receipt, (2) limited English proficiency, (3) veteran status, and (4) possession of a disability. Both low-income and veteran status had high rates of missing data (about 90 and 83 percent, respectively), and both English learners and disabled participants were a small proportion of the TBL population (2 and 13 percent, respectively), which makes interpretation of these results difficult.

Table III.5. Demographics of Program Participants and Program Characteristics (percentages unless noted otherwise)

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**14,968**	**11,891**	**180**	**2,897**	**11,144**	**2,453**	**1,371**	**187**	**13,443**	**300**	**747**	**291**
Number of Programs	21	4	1	16	4	11	6	2	11	2	4	2
Number of Grantees	20	4	1	15	4	10	6	2	11	2	4	2
Gender												
Male	44.5	50.1*	10.6*	45.6*	38.7*	41.2*	48.3*	55.8*	52.2*	6.6*	34.6*	34.5*
Female	55.5	49.9*	89.4*	54.4*	61.3*	58.9*	51.7*	44.2*	47.8*	93.4*	65.4*	65.5*
Age												
Average	38.3	42.3*	31.7*	37.9*	40.1*	41.7*	35.3*	43.8*	37.9	48.7*	33.7*	33.3*
18–24	16.8	8.9	40.8	16.5	13.7	15.7	18.7	13.9	19.2	0.4	17.4	19.3
25–44	50.6	45.9	42.5	52.4	47.7	38.0	60.1	31.7	49.4	33.8	70.5	57.5
45 and older	31.2	44.4	16.8	29.5	38.6	45.3	19.1	53.2	31.1	65.4	11.9	13.3
F-test for distribution			2.4			2.9†				13.9†		
Race/Ethnicity												
Asian/Pacific Islander	7.1	2.6	0.0	9.1	0.9	8.5	8.3	21.3	5.0	3.4	9.3	0.4
Black	23.6	25.1	0.6	25.3	62.5	19.9	13.3	4.3	32.5	6.8	20.8	7.3
Native American	0.4	0.4	0.0	0.5	0.5	0.2	0.6	0.4	0.4	0.0	0.7	0.7
White	60.0	66.9	98.3	54.5	35.0	59.1	69.0	49.1	56.6	88.4	55.6	88.2
Hispanic	8.5	4.8	0.6	10.3	0.9	12.1	8.4	24.9	5.2	0.7	13.0	3.4
Other	0.3	0.2	0.6	0.3	0.3	0.2	0.4	0.0	0.3	0.7	0.6	0.0
F-test for distribution			2.6			13.2†				6.6†		
Other												
Low Income	42.5	n.a.	n.a.	42.5	59.6*	33.1*	40.7	47.7	44.5	n.a.	23.8*	41.5
Limited English Proficiency	2.3	0.0*	n.a.	2.5*	0.0*	5.0*	1.2*	9.5*	0.0*	0.0*	3.3	0.0*
Veteran	9.3	15.9*	5.0*	9.1	13.0	7.3*	10.4	7.5	12.2*	6.2	4.7*	5.5*
Has a disability	12.8	0.0*	3.9*	14.7*	1.3*	3.5*	23.2*	6.4*	21.2*	3.4*	0.0*	2.9*

Source: Administrative data provided by TBL grantees.

Note: Data were weighted to capture the characteristics of the average participant at the average TBL grantee's program. Percentages reflect only participants for whom data were available. See the list of acronyms at the beginning of the report for definitions of all acronyms used.

* = $p \leq 0.05$, two-tailed *t*-test; † = $p \leq 0.05$, *f*-test.

One of ETA's major goals for the TBL initiative was to increase the skilled workforce. The administrative data grantees provided affords an opportunity to assess whether the initiative increased skills of people who might need the boost the most: those with low levels of education or who were not employed before entering a TBL program (Table III.6). These data suggest that about 2 percent of TBL participants did not have a high school diploma or equivalent, and about 42 percent had a high school diploma or GED credential but had no further education when they enrolled in the TBL program. Therefore, although programs were not serving those who most needed skill upgrades (those without a high school diploma), they did serve a sizable proportion who did not continue education past high school. Some variation in the populations served did exist across programs with different instructional models, program durations, and credentials; however, differences could represent different program requirements. For example, participants who had a bachelor's degree when they enrolled in a TBL program were more heavily concentrated in the programs that offered degrees (41 percent) than in the programs that offered certificates (25

percent) or no credential (14 percent), but participants who had only a high school diploma were highly concentrated in programs that did not offer a credential or offered a certificate. These differences could reflect higher student eligibility requirements in degree-granting programs.

Programs that target employed people often have different goals and structure from programs that target people who are not working. Programs serving workers might aim to upgrade their skills, while programs serving those not working might seek to build skills. Many TBL programs implicitly targeted one group or another. For example, the two TBL programs that offered a license were designed for people whose licenses had expired, which might be attractive to people who had left the workforce. In contrast, the CATS program targeted employed mental-health workers, and the Virtual Hospital program was designed for practicing nurses. Administrative data the programs provided suggest that TBL programs served both groups. About 56 percent of participants were employed and 44 percent not employed when they enrolled in the program, and the types of programs in which each group enrolled differed (Table III.6). Participants who were employed when enrolling had higher levels of participation in online-only, short, and degree programs; those who were not employed had higher levels of participation in blended, mid-length, and license/no or multiple credential programs. Data are not available to assess whether these differences are due to different preferences of employed and not employed workers or to different structures imposed on each group.

Table III.6. Preprogram Education and Employment and Program Characteristics (percentages unless noted otherwise)

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**14,968**	**11,891**	**180**	**2,897**	**11,144**	**2,453**	**1,371**	**187**	**13,443**	**300**	**747**	**291**
Number Programs	21	4	1	16	4	11	6	2	11	2	4	2
Number Grantees	20	4	1	15	4	10	6	2	11	2	4	2
Education												
No high school diploma	1.6	1.3	n.a.	1.7	2.6	2.9	0.5	3.8	1.9	0.0	0.0	1.7
High school/GED	42.4	41.8	n.a.	42.5	58.7	35.7	39.1	49.0	49.6	0.0	24.1	98.3
Some college	17.1	6.3	n.a.	20.0	0.5	38.8	11.2	17.0	6.3	100.0	16.5	0.0
Associate's degree	9.7	16.0	n.a.	8.1	11.0	11.2	8.3	15.7	10.9	0.0	8.0	0.0
Bachelor's degree	23.4	24.4	n.a.	23.2	19.2	9.8	33.9	13.6	24.8	0.0	40.8	0.0
Graduate degree	5.7	10.3	n.a.	4.5	8.0	1.7	7.1	0.9	6.4	0.0	10.6	0.0
F-test for distribution		4.5†			8.5†			3.0†				
Employment at Entrance												
Not employed	43.8	15.3*	53.9*	51.7*	32.9*	53.2*	40.3*	72.5*	40.9*	66.9*	12.9*	63.2*
Employed	56.2	84.7*	46.1*	48.3*	67.1*	46.8*	59.7*	27.5*	59.1*	33.1*	87.1*	36.8*

Source: Administrative data provided by TBL grantees.

Note: Data were weighted to capture the characteristics of the average participant at the average TBL grantee's program. Percentages reflect only participants for whom data were available. See the list of acronyms at the beginning of the report for definitions of all acronyms used.

* = $p \leq 0.05$, two-tailed *t*-test; † = $p \leq 0.05$, *f*-test.

Survey data provide information on weeks worked and wages; therefore, these data provide a more in-depth description of variations in preprogram labor market activities of TBL participants than do the administrative data, albeit on a smaller group of participants (Table III.7). Survey data show a significantly higher proportion of TBL participants were employed when they enrolled in their program (65 percent, compared to the 56 percent in administrative data).[12] Employed survey respondents reported they worked about 37 hours per week, on average, at an average pay rate of $19.60 per hour. The near full-time employment of a majority of TBL participants suggests a need for flexibility in program participation. Indeed, respondents in online-only programs reported working more hours on average (34 hours) per week than participants in classroom-based (16 hours) or blended (23 hours) programs.

[12] See Appendix B.

Table III.7. Preprogram Employment Experience and Program Characteristics (percentages unless noted otherwise)

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**700**	**184**	**42**	**474**	**237**	**198**	**265**	**20**	**478**	**48**	**111**	**43**
Percentage Employed	64.6	91.8	35.7	56.5	69.5.	50.5	70.6	85.0	61.7	37.5	79.3	79.1
All Individuals												
Nonemployment Pending	3.4	2.7	4.4	3.6	5.3	3.0	2.9	2.8	3.4	2.1	2.3	7
Hours Worked per Week												
Average	25.0	33.6*	15.5*	23.3*	15.9	17.9	20.1	31.4	22.2*	13.2*	31.7*	27.9
Less than 1	32.3	15.2	65.9	34.8	38.4	36.9	27.2	8.3	40.9	63.4	16.0	23.3
1–20	10.7	7.3	4.9	12.0	7.4	11.3	11.6	25.0	8.0	4.3	9.6	16.3
21–40	42.0	52.5	17.1	40.7	45.2	37.5	43.4	55.6	38.3	25.8	53.5	35.5
41–60	13.7	22.9	7.3	11.6	7.8	10.9	17.6	5.6	11.4	6.5	20.9	24.9
61 or more	1.3	2.1	4.9	0.9	1.1	3.3	0.2	5.6	1.3	0.0	0.0	0.0
F-test for distribution			7.0†			1.1				0.7		
Hourly Rate of Pay												
Average (in $)	13.1	14.8	2.7*	13.3	10.0*	12.2	14.9*	21.6	9.7*	6.3*	21.1*	11.2
Not employed ($0)	32.9	15.7	67.5	35.4	40.0	37.3	27.6	8.3	42.2	63.4	16.2	23.3
$0–9.99	14.4	26.9	30.0	10.1	20.8	19.7	8.6	25.0	16.9	6.5	1.0	19.9
$10.00–20.99	28.3	24.7	2.5	30.8	20.8	19.3	36.6	25.0	23.2	17.6	40.2	42.5
$21.00–50.99	23.3	32.7	0.0	22.3	18.4	22.8	25.6	38.9	17.8	12.5	38.6	14.3
$51 or more	1.1	0.0	0.0	1.4	0.0	1.0	1.5	2.8	0.0	0.0	4.0	0.0
F-test for distribution			1.4			0.9				1.0		
Individuals Employed at Enrollment Only												
Sample Size	**452**	**169**	**15**	**268**	**165**	**187**	**100**	**17**	**295**	**18**	**88**	**34**
Nonemployment Pending	5.2	3.2	13.3	5.5	8.8	4.9	4.1	3.0	6.0	5.9	2.7	9.3
Hours Worked per Week												
Average	37.0	39.6	45.5	35.8*	26.4	29.0	27.8	34.3	37.6	36.1	37.8	36.3
0–20	15.8	8.6	14.3	18.4	12.1	17.9	15.9	27.3	13.6	11.8	11.4	21.2
21–40	62.1	61.9	50.0	62.5	73.4	59.4	59.6	60.6	64.9	70.5	63.7	46.2
41–60	20.2	27.0	21.4	17.8	12.6	17.3	24.2	6.1	19.2	17.7	24.8	32.5
61 or more	1.9	2.5	14.3	1.3	1.8	5.3	0.2	6.1	2.3	0.0	0.0	0.0
F-test for distribution			1.2			1.0				0.5		
Hourly Rate of Pay												
Average (in $)	19.6	17.6	8.3*	20.6*	16.7*	19.5	20.5	23.6	16.8*	17.2	25.2*	14.6*
$0–9.99	21.4	31.9	92.3	15.6	34.7	31.5	11.9	27.3	29.2	17.7	1.2	26.0
$10.00–20.99	42.2	29.3	7.7	47.7	34.6	30.7	50.6	27.3	40.1	48.2	47.9	55.4
$21.00-50.99	34.8	38.8	0.0	34.5	30.7	36.3	35.4	42.4	30.7	34.2	46.1	18.6
$51 or more	1.6	0.0	0.0	2.2	0.0	1.5	2.1	3.0	0.0	0.0	4.8	0.0
F-test for distribution			2.8			1.9				0.9		

Source: Participant survey.

Note: Data were weighted to capture the characteristics of the average participant at the average TBL grantee's program. Percentages reflect only participants for whom data were available. "Nonemployment Pending" means the respondent received a notice of termination of employment, his or her employer issued a Worker Adjustment and Retraining Notification (WARN) or other notice that the facility was closing, or the respondent is a transitioning service member. Individuals not employed at enrollment are classified as having wages of 0.00 and hours of 0.

* = $p \leq 0.05$, two-tailed *t*-test; † = $p \leq 0.05$, *f*-test.

Whether a participant succeeds in a TBL program depends on a variety of factors, one of which is the ability to use technology (Muilenburg and Berge 2005). Survey data suggest that TBL programs fostered this success—knowingly or unknowingly—by enrolling participants with an ability to use technology (Table III.8). More than half (53 percent) had prior experience with TBL, and a similar proportion (58 percent) claimed they had (self-defined) advanced internet skills before enrolling in a TBL initiative program. There was virtually no variation in prior online course experience and internet skills across different program types. Still, 11 percent claimed only to have "beginner" skills, and ETA expected TBL grantees to provide extra support for participants such as these whose computer skills were not at the requisite level. SPR reported in their study that many programs offered technical support or basic computer training courses for students as needed (Dunham et al. 2011b).

Table III.8. Preprogram Technology Experiences and Program Characteristics (percentages unless noted otherwise)

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**710**	**185**	**45**	**480**	**241**	**202**	**267**	**20**	**486**	**49**	**112**	**43**
Prior Experience with Online or Technology-Based Courses	53.3	61.0	52.3	51.4	50.0	42.3*	61.2*	47.2	52.1	29.3*	67.7*	52.1
Internet Skill												
Beginner	11.0	13.2	18.2	9.9	25.4	11.1	5.2	5.6	13.5	25.5	4.3	7.0
Intermediate	31.2	28.4	36.4	31.6	34.1	36.1	27.2	33.3	30.8	51.7	25.9	29.8
Advanced or expert	57.8	58.4	45.5	58.5	40.4	52.8	67.7	61.1	55.6	22.8	69.7	63.2
F-test for distribution			0.5			2.7				1.5		

Source: Participant survey.

Notes: Data were weighted to capture the characteristics of the average participant at the average TBL grantee's program. Percentages reflect only participants for whom data were available. The levels of *internet skill* were not defined in the survey and represent the respondent's assessment of his or her own skill level. *Prior experience with online or technology-based courses* is a yes answer to the question, "Prior to enrolling in this program, had you ever participated in any kind of online or technology-based courses before? This can include courses that use electronic technology, such as online or web-based learning, intranets, satellite broadcasts, audio and video conferencing, bulletin boards, chat rooms, webcasts, and CD-ROM."

* = $p \leq 0.05$, two-tailed *t*-test; † = $p \leq 0.05$, *f*-test.

Survey data suggest that participants in programs that were part of the TBL initiative had a variety of reasons for enrolling in their programs (Table III.9). When asked for their primary reason for enrolling in their TBL program, the most popular response was to upgrade skills for a better job or to reenter the workforce (31 percent). This was followed closely by participants training for a new career path (22 percent) or for higher education goals (23 percent). Only a small percentage of participants attended at the request of their employer (6 percent). Variations in reason for enrollment exist across instructional model, program duration, and credential offered, as might be expected as participants select programs based on motivation. For example, students in longer programs (six months or longer) were more likely to have been motivated to enroll in a TBL program to retrain for a new career (36 percent), and building new skills often takes more time than upgrading existing ones.

Survey respondents offered flexibility as a key motivator for choosing a technology-based format over a traditional classroom one (Table III.9). Seventy-one percent cited flexibility with life responsibilities as a reason for choosing TBL over traditional instruction. A preference for self-paced instruction was also commonly cited (30 percent), confirming that convenience is a big advantage of the TBL format and valued by members of the workforce. Somewhat surprisingly, distance or lack of transportation was cited by only 13 percent of survey respondents as a reason for choosing a technology-based course, even though advances in technology have been connected to the rapid growth of distance education (Bates 2005). Slight variation existed in the reasons survey respondents gave for choosing TBL over traditional formats across different program types, but clear-cut patterns did not emerge.

Table III.9. Motivation for Enrolling in TBL and Program Characteristics (percentages unless noted otherwise)

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**704**	**184**	**44**	**476**	**238**	**199**	**267**	**20**	**482**	**48**	**112**	**43**
Primary Objective for Enrolling in TBL												
Upgrade skills: promotion/new job or reenter workforce	30.8	14.7	36.4	34.7	25.5	37.6	28.9	27.8	31.6	74.3	21.9	23.4
Advance educational goals	23.0	27.1	27.3	21.7	22.1	23.1	23.4	27.8	20.3	2.3	33.0	24.9
Retrain for new career	21.5	11.9	22.7	23.9	9.9	8.7	33.6	0.0	22.1	0.0	31.6	31.8
Upgrade skills: current job	15.6	28.2	6.8	12.9	27.3	21.2	7.8	41.7	15.0	4.5	9.4	10.8
Employer suggested or required	5.4	16.2	2.3	2.8	11.3	6.8	2.3	0.0	7.0	17.1	3.1	0.0
Other	3.6	1.9	4.5	4.0	4.0	2.6	4.1	2.8	3.9	1.7	1.0	9.0
F-test for distribution			9.3†			4.1†				1.7		
Reason Chose Format												
Flexibility with life responsibilities	70.7	67.0	66.7	71.9	59.8*	68.8	76.0*	88.9*	63.2*	44.0*	86.0*	78.7
Preference for self-paced instruction	30.0	24.9	9.5*	32.6*	29.5	35.7	26.8	72.2*	26.8	14.7*	27.1	19.0
Interest in technology or internet	23.7	22.8	4.8*	25.1	26.5	24.4	22.1	36.1	28.1	4.3*	6.0*	32.0
Program not offered in traditional format	18.0	16.9	16.7	18.3	20.2	22.8	14.2*	16.7	16.1	57.7*	16.9	8.9
Distance/lack of transportation	13.3	14.5	23.8	12.3	19.0*	9.6	13.2	5.6	15.0	13.0	12.5	13.8
Program was cost-effective (write-in)	1.5	3.6	0.0*	1.1	0.2*	2.3	1.6	0.0*	2.8*	0.0*	0.0*	0.0*
Other	4.1	5.9	11.9	3.1	5.0	4.4	3.5	0.0*	6.0*	2.2	1.5*	3.4

Source: Participant survey.

Note: Data were weighted to capture the characteristics of the average participant at the average TBL grantee's program. Percentages reflect only participants for whom data were available. Respondents were asked about their *primary* objective in deciding to enroll in their TBL program. They were also asked why they decided to enroll in their TBL program instead of a traditional classroom-based one and were instructed to identify all reasons that applied. Numbers reflect the percentage that identified each reason.

* = $p \leq 0.05$, two-tailed *t*-test; † = $p \leq 0.05$, *f*-test.

C. Summary

Administrative and survey data analyzed in this chapter paint a portrait of TBL participants who are demographically diverse and motivated to enroll in TBL programs because the programs provide flexibility in balancing an ability to upgrade skills with life responsibilities. Most TBL program participants were women, people between ages 25 and 44, white, or workers. These participants reported a variety of reasons for enrolling in their program. Nearly one-third wanted to upgrade their skills for a better job or to reenter the workforce, and more than one-fifth wanted to train for a completely new career path or a higher education goal. Participants appeared to want flexibility in achieving these goals. Nearly three-quarters cited flexibility with life responsibilities as a reason for choosing TBL over traditional instruction, and nearly one-third reported a preference for self-paced instruction. Despite the challenges that might accompany diversity in students and their juggling program participation with other responsibilities, programs seemed to have built a supportive learning community for TBL participants. Participants reported that programs maintained both in-person and remote contact between participants and between participants and instructors and that they offered supportive services to help ensure their needs were met and employment potential was reached.

IV. CUSTOMER SATISFACTION

Participant opinions about TBL program implementation can yield valuable insights into why some programs are successful or why some outcomes are positive. They can also provide clues as to why some programs might struggle to show benefits. A primary goal of this evaluation was to document and assess customer satisfaction with TBL grantee programs, to inform lessons that could be learned from the initiative and applied to workforce training programs. Analysis of information from the survey of TBL participants presented in this chapter addresses this goal by answering the question: *How satisfied were participants with their experience in the TBL program?*

The chapter uses data from the participant survey and examines general program satisfaction with TBL programs, as well as satisfaction with program instruction and format, ease of technology use, and benefits of TBL. It presents results of a descriptive analysis to examine satisfaction both in the aggregate for the sample of survey respondents and disaggregated by participant and program characteristics. Disaggregation by participant characteristics includes subpopulations of survey respondents, with at least 65 percent of the participants having information on the characteristics and at least 10 percent of the participants having the characteristic (age, gender [male and female], race [black and white], preprogram employment, and preprogram education). Disaggregation by program characteristics includes those described in Chapter III: (1) types of instructional methodologies (online, classroom-based, and blended); (2) program duration; and (3) credentials offered (none, certification, license, degree, and multiple). It also presents results from a multivariate analysis (ordered probits) to assess associations between indices of satisfaction and participant, program, and labor market characteristics and between the same indices and specific attributes of a participant's TBL program (reasons for enrollment, program experience, and services received through the program).

A. General Program Satisfaction

When asked to rate their overall experience, survey respondents were overwhelmingly positive about their TBL programs. Tables IV.1a and IV.1b summarize survey responses on three general survey questions of satisfaction: (1) overall program satisfaction, (2) whether the participant would recommend the program, and (3) the extent to which the participant prefers online or TBL technology to traditional training. The (weighted) analysis shows that nearly three-quarters of the respondents said that they were very satisfied or satisfied with their program (73 percent). Only 5 percent reported being very dissatisfied with the program overall. No significant differences existed in the reported levels of program satisfaction based on different participant characteristics (Table IV.1a) or for different types of program (Table IV.1b).

An even greater percentage of survey respondents would recommend the program they attended to others. Nearly 90 percent of survey respondents either strongly agreed or agreed that they would recommend the program to other students who might be looking for a similar learning opportunity. Again, only 5 percent strongly disagreed that they would recommend the program. Although no significant differences existed in the proportions of respondents who would recommend the program across different participant characteristics (Table IV.1a) or with instructional model or credential offered of the program, variation did exist by program duration (Table IV.1b). Survey respondents in the longest TBL programs (more than six months) were more likely to feel strongly about recommending the program to others (49 percent saying they strongly agreed) than were those in other programs (40 percent in short, and 47 percent in mid-length, programs).

Table IV.1a. General Program Satisfaction, by Participant Characteristics

		Preprogram Employment		Gender		Preprogram Education Level			Age			Race	
	Total	Employed	Not Employed	Male	Female	HS/GED	College	Graduate Degree	18–24	25–44	45 and Older	Black	White
Sample Size	**710**	**451**	**248**	**218**	**401**	**132**	**329**	**243**	**71**	**256**	**175**	**157**	**307**
Program Satisfaction													
Very satisfied	42.8	37.5	54.0	40.7	43.0	52.3	41.3	40.5	31.4	41.7	53.6	56.4	37.4
Satisfied	29.8	32.0	25.3	25.7	34.7	29.0	27.0	35.2	24.1	31.2	30.1	23.9	28.6
Neutral	19.5	22.8	12.4	26.9	14.4	12.5	23.5	16.2	34.6	19.7	10.3	12.7	26
Dissatisfied	3.4	3.4	3.3	2.3	3.6	2.0	4.3	2.5	1.4	3.4	1.8	3.6	2.7
Very dissatisfied	4.5	4.3	5.0	4.4	4.3	4.2	3.9	5.7	8.5	4.0	4.3	3.4	5.3
F-test for distributions		2.2		0.6		1.4			0.4			0.9	
Recommend Program													
Strongly agreed	46.6	44.6	50.7	46.2	47.6	45.3	48.9	43.2	58.2	44.1	49.0	48.8	46.2
Agreed	42.1	43.2	39.9	45.2	38.8	45.0	40.2	44.0	30.0	42.4	42.7	41.2	42.2
Disagreed	6.3	7.0	4.7	3.6	8.6	5.9	6.9	5.4	7.3	7.6	4.8	6.1	6.1
Strongly disagreed	5.0	5.2	4.7	5.0	5.0	3.8	4.0	7.4	4.5	5.9	3.5	3.9	5.5
F-test for distributions		0.5		0.8		1.4			0.4			0.7	
Prefer Online or TBL to Traditional Training													
Strongly agreed	25.7	26.1	24.8	23.9	27.8	29.9	24.9	25.3	21.8	25.9	28.1	20.3	26.3
Agreed	34.5	34.2	35.5	31.4	37.0	36.9	36.6	30.4	23.8	42.8	32.2	29.9	38.3
Disagreed	34.7	35.8	31.9	37.4	31.6	31.6	35.6	34.6	51.0	30.3	30.1	44.3	32.3
Strongly disagreed	5.1	4.0	7.8	7.2	3.7	1.5	2.9	9.8	3.5	1.0	9.7	5.6	3.2
F-test for distributions		0.0		0.1		1.1			1.0			1.4	

Source: Participant survey.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

Table IV.1b. General Program Satisfaction, by Program Characteristics

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 weeks	6 weeks to 6 months	6 months to 2 years	None	Certificate	License	Degree	Multiple
Sample Size	**710**	**185**	**45**	**480**	**241**	**202**	**267**	**20**	**486**	**49**	**112**	**43**
Program Satisfaction												
Very satisfied	42.8	48.5	61.5	40.2	54.8	42.3	38.5	19.4	50.9	53.5	34.4	33.4
Satisfied	29.8	31.2	33.3	29.3	28.3	24.7	33.5	25.0	30.5	19.3	30.8	35.0
Neutral	19.5	18.5	5.1	20.5	11.5	29.2	16.8	55.6	14.1	14.5	20.7	12.3
Dissatisfied	3.4	0.7	0.0	4.3	1.9	2.5	4.5	0.0	2.0	8.3	3.9	10.5
Very dissatisfied	4.5	1.2	0.0	5.7	3.5	1.3	6.8	0.0	2.5	4.4	10.2	8.9
F-test for distributions			0.8			1.7				1.5		
Recommend Program												
Strongly agreed	46.6	40.1	39.5	48.7	40.4	47.3	48.5	50.0	49.0	55.3	36.9	44.0
Agreed	42.1	52.6	52.6	38.8	51.7	45.4	36.6	47.2	44.4	32.0	39.0	36.8
Disagreed	6.3	5.7	7.9	6.3	5.0	4.8	7.6	0.0	4.2	8.3	13.4	8.7
Strongly disagreed	5.0	1.6	0.0	6.2	2.9	2.5	7.3	2.8	2.4	4.4	10.8	10.5
F-test for distributions			1.2			4.2†				2.2		
Prefer Online or TBL to Traditional Training												
Strongly agreed	25.7	31.8	20.0	24.4	24.8	19.6	29.2	21.9	25.7	15.0	28.4	30.6
Agreed	34.5	41.1	30.0	33.0	48.9	42.6	26.0	46.9	33.3	51.2	27.3	33.3
Disagreed	34.7	24.7	40.0	37.0	22.7	34.1	38.6	31.3	35.5	30.6	34.9	36.2
Strongly disagreed	5.1	2.4	10.0	5.6	3.5	3.8	6.2	0.0	5.5	3.1	9.4	0.0
F-test for distributions			4.4†			5.8†				3.6†		

Source: Participant survey.

Note: See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

About 60 percent of survey respondents strongly agreed or agreed that online or TBL was preferable to traditional classroom training. Only 5 percent strongly preferred traditional learning to online or TBL learning. Although no significant variation was found in preferences across different types of participants (Table IV.1b), preferences did vary across instructional model, program duration, and credential offered (Table IV.1a).

- Respondents in online-only programs were more likely to prefer online or TBL learning to traditional learning (73 percent) than those in the classroom-based program (50 percent) or blended programs (57 percent).
- Respondents in the shortest TBL programs were more likely to prefer online or TBL learning to traditional learning (74 percent) than those in mid-length (62 percent) or long (54 percent) programs. Many of the grantees with longer programs were traditional learning institutions (for example, CSN, UCD, and WGU), and respondents from these programs may have compared their TBL offerings to their traditional offerings and found that TBL offerings were less satisfactory.
- Respondents in degree programs were the most likely to prefer traditional learning over TBL learning. Nine percent from degree programs preferred traditional learning, compared to no respondents from programs that did not offer credential or multiple credentials, and 6 and 3 percent from certificate and license programs, respectively. Again, programs that offer degrees are also more likely to primarily offer traditional learning courses. Instructors at these institutions may be more comfortable with

traditional learning, which may come through in their TBL courses. Respondents in license programs were the least likely to strongly prefer online or TBL learning (15 percent). Both license programs were in nursing, and this could reflect the challenge of integrating technology into an area based on human interaction.

B. Satisfaction with Program Instruction

TBL respondents to the participant survey also shared positive reviews of their instructors. Survey respondents largely felt that instruction, and interaction with their instructor, were satisfactory and that instructors provided sufficient support in answering questions from students and providing feedback on coursework (Tables IV.2a and IV.2b).

More than 90 percent of survey respondents agreed that their TBL instructor was satisfactory and only 3 percent strongly disagreed, which shows general satisfaction with instruction. Levels of satisfaction do not appear to vary by participant characteristics (Table IV.2a), instructional mode, or credential offered, but might vary with program duration (Table IV.2b). Respondents in longer programs (over six months) were more likely to disagree that instruction was satisfactory (9 percent) than respondents in short programs (5 percent) or mid-length programs (4 percent). Because students may find it challenging to stay engaged with instruction in a program, longer TBL programs may need to consider ways to modify the instructional approach to keep students interested and engaged.

Having access to an instructor is important for online or TBL programs because students may have questions about course materials or requirements. Participants were asked if their instructor was available to answer questions during the program. More than 90 percent of respondents agreed or strongly agreed that their instructor provided timely feedback. Levels of satisfaction did not appear to differ significantly by participant characteristics, instructional model, or credential offered, but did vary with program duration. Respondents in mid-length programs were the most likely to strongly agree or agree that their instructor was available (more than 95 percent), and students in the shortest programs were the most likely to strongly disagree with this statement (7 percent). Two of the TBL programs in the shorter than six weeks category (CATS and MDL/MUP) were asynchronous programs that participants could access on their own schedule. Participants in these programs were unlikely to have much interaction or access to a course instructor while they took courses.

Receiving feedback from instructors can help students evaluate their progress and focus on where they need improvement. Feedback can also help keep students properly engaged in the course material; otherwise, they may feel unsure of the pace at which they should be working, or whether they are adequately learning the concepts. Participants were asked in the survey if they received timely feedback from instructors, and about 90 percent of survey respondents either agreed or strongly agreed that feedback was timely; only 3 percent strongly disagreed. Adequacy of instructor feedback did not appear to vary by participant characteristics, instructional model, or credential offered, but did vary by program duration. Respondents in the shortest TBL programs were the most likely to disagree with the statement about timely feedback (about 20 percent disagreed or strongly disagreed), compared to those in mid-length (3 percent) or longer (11 percent) programs. Because the shorter programs lasted only a matter of weeks (and some only a matter of hours), access to instructors might be limited; instructors might have been unable to give enough feedback to affect learning positively.

Table IV.2a. Satisfaction with Program Instruction, by Participant Characteristics

		Preprogram Employment		Gender		Preprogram Education Level			Age			Race	
	Total	Employed	Not Employed	Male	Female	HS/GED	College	Graduate Degree	18–24	25–44	45 and Older	Black	White
Sample Size	**710**	**451**	**248**	**218**	**401**	**132**	**329**	**243**	**71**	**256**	**175**	**157**	**307**
Instruction Was Satisfactory													
Strongly agreed	35.2	31.4	43.4	33.7	35.8	30.6	36.6	35.2	24.2	33.9	44.5	36.5	33.9
Agreed	56.6	60.4	48.5	60.0	54.3	65.0	54.5	55.9	63.6	57.7	48.4	55.0	57.2
Disagreed	5.1	5.1	5.1	3.1	6.6	2.7	6.0	4.9	8.4	3.8	4.4	3.6	4.5
Strongly disagreed	3.1	3.1	3.0	3.3	3.4	1.7	3.0	4.0	3.7	4.6	2.8	4.9	4.4
F-test for distributions		1.3		0.5		1.4			1.8			0.2	
Instructor Was Available to Answer Questions													
Strongly agreed	42.3	36.8	53.7	47.1	38.6	44.6	45.7	35.3	42.9	44.9	44.2	45.8	46.2
Agreed	49.0	53.2	40.1	46.7	52.0	45.9	47.8	52.7	52.0	46.7	45.6	44.3	44.9
Disagreed	6.4	7.3	4.5	5.5	5.8	7.4	4.8	8.6	4.4	6.3	5.7	5.5	7.4
Strongly disagreed	2.3	2.6	1.6	0.8	3.6	2.1	1.7	3.4	0.7	2.2	4.5	4.5	1.5
F-test for distributions		2.7		1.4		2.0			1.3			0.9	
Instructor Provided Timely Feedback													
Strongly agreed	35.5	30.3	46.6	37.2	35.5	34.1	36.8	34.0	28.9	35.9	47.2	40.4	38.0
Agreed	54.4	59.4	43.8	54.2	53.5	51.7	55.3	54.2	65.6	55.2	40.4	49.9	52.2
Disagreed	7.4	7.6	7.1	6.1	8.2	10.5	6.1	8.2	3.0	5.8	9.7	5.7	6.7
Strongly disagreed	2.6	2.7	2.5	2.5	2.8	3.7	1.7	3.6	2.6	3.1	2.7	4.0	3.1
F-test for distributions		2.1		0.7		1.5			1.6			0.6	
Interaction with Instructor Was Adequate													
Strongly agreed	36.6	33.9	42.1	40.8	35.0	30.7	41.7	30.8	36.7	40.4	43.1	36.8	41.4
Agreed	48.9	52.1	42.0	49.2	46.9	56.4	46.4	49.2	49.7	46.7	42.5	46.7	46.0
Disagreed	10.2	9.1	12.4	7.1	12.4	8.4	8.5	13.8	7.2	8.5	10.8	11.7	7.6
Strongly disagreed	4.4	4.8	3.5	2.9	5.6	4.6	3.3	6.2	6.4	4.4	3.6	4.8	5.0
F-test for distributions		1.3		0.6		1.6			1.0			0.1	

Source: Participant survey.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

Table IV.2b. Satisfaction with Program Instruction, by Program Characteristics

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 weeks	6 weeks to 6 months	6 months to 2 years	None	Certificate	License	Degree	Multiple
Sample Size	**710**	**185**	**45**	**480**	**241**	**202**	**267**	**20**	**486**	**49**	**112**	**43**
Instruction Was Satisfactory												
Strongly agreed	35.2	33.1	55.0	34.6	31.2	34.0	37.4	13.9	40.5	49.1	28.5	33.6
Agreed	56.6	64.5	37.5	55.7	63.5	61.9	50.8	86.1	53.2	40.8	56.2	54.2
Disagreed	5.1	0.0	7.5	6.3	0.8	3.4	7.7	0.0	3.5	7.9	8.7	10.5
Strongly disagreed	3.1	2.3	0.0	3.5	4.4	0.7	4.0	0.0	2.8	2.2	6.5	1.7
F-test for distributions			1.3			5.0†				0.9		
Instructor Was Available to Answer Questions												
Strongly agreed	42.3	30.6	70.0	43.6	33.0	52.2	39.9	38.9	46.4	57.9	29.2	40.5
Agreed	49.0	55.1	27.5	48.8	48.1	44.9	51.7	58.3	44.8	36.0	62.2	43.7
Disagreed	6.4	8.8	2.5	6.0	12.0	0.9	7.7	0.0	6.1	0.0	7.6	15.8
Strongly disagreed	2.3	5.5	0.0	1.6	6.9	2.0	0.8	2.8	2.7	6.1	1.0	0.0
F-test for distributions			2.6			4.7†				0.5		
Instructor Provided Timely Feedback												
Strongly agreed	35.5	28.3	60.0	35.9	30.0	41.2	34.2	19.4	44.0	55.7	22.5	21.2
Agreed	54.4	55.9	35.0	55.2	50.2	55.7	55.1	80.6	45.4	38.6	64.4	64.9
Disagreed	7.4	11.8	5.0	6.5	13.5	2.2	8.3	0.0	7.2	1.7	12.1	10.5
Strongly disagreed	2.6	4.1	0.0	2.4	6.3	0.9	2.3	0.0	3.4	3.9	1.0	3.4
F-test for distributions			2.0			4.9†				1.1		
Interaction with Instructor Was Adequate												
Strongly agreed	36.6	28.2	62.5	37.1	24.8	47.0	34.6	41.7	41.5	47.4	24.3	22.9
Agreed	48.9	55.0	32.5	48.3	57.2	42.0	49.9	47.2	44.6	36.4	54.7	68.3
Disagreed	10.2	12.4	5.0	9.9	10.6	8.6	11.0	8.3	9.6	12.3	13.8	7.0
Strongly disagreed	4.4	4.4	0.0	4.7	7.4	2.3	4.5	2.8	4.3	3.9	7.2	1.7
F-test for distributions			1.3			4.5†				2.2		

Source: Participant survey.

Note: See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

The ability to interact directly with instructors often helps students clarify difficult concepts, seek career advice, or discuss related topics. Students in traditional programs might have this opportunity simply because they meet with their instructors face to face. The concern is whether TBL programs encourage enough interaction between instructors and students. Most survey respondents strongly agreed (37 percent) that interaction with their instructor was adequate, and this did not appear to vary with participant instructional model or credential offered. It did vary with program duration, however, as 47 percent of respondents from mid-length programs strongly agreed with the statement.

C. Satisfaction with Program Format

Because instructional format is a large part of what sets TBL apart from traditional courses, the survey asked participants to say how satisfied they were with the format of their program. Tables IV.3a and IV.3b present results from the survey on this dimension for six related topics. For each topic, participants were asked how much they agreed with the statement: the program provided the participant with (1) a convenient way to participate in training, (2) flexibility in participating with other life activities, (3) a way to feel part of a learning community, (4) student-to student interaction, (5) a satisfactory pace in learning, and (6) more difficulty in understanding than a traditional classroom. Participants were generally satisfied with the convenience and flexibility of training, the

feeling of being in a learning community, the level of student interaction, and the pace of learning, but some felt that the content was more difficult to understand than it would be in a traditional context.

An important benefit of incorporating internet technology into learning is the convenience and flexibility it can provide to students. About 94 percent of participants either agreed or strongly agreed that their program was a convenient way to participate in training, and a similar percentage (90 percent) felt the program provided them with flexibility with their other life responsibilities such as work and travel. Responses did not differ significantly by program characteristics. Because TBL programs approached the integration of technology in different ways, these results suggest that there are several ways in which convenience and added flexibility can be afforded to students.

One goal of the TBL initiative was for programs to create a sense of community for participants and facilitators. Most survey respondents strongly agreed or agreed that they felt like they were part of a learning community (86 percent), although a sizable percentage did not feel part of a learning community (14 percent replied that they disagreed or strongly disagreed). Employed respondents appeared to be slightly less likely to feel part of a learning community. Feelings did not appear to vary with other participant or program characteristics.

Another challenge for TBL programs is to encourage student-to-student interaction, as participants who interact with their course through technology may have limited exposure to fellow students. Respondents to the survey seemed not to recognize interaction with other students as a challenge, however, with 88 percent strongly agreeing or agreeing that interaction between students was satisfactory. Although there was no variation in interaction with other students with participant characteristics, instructional mode, or credential offered, satisfaction might vary with program duration. Respondents from mid-length programs were more likely to say they strongly agreed or agreed that they had satisfactory interactions with other students (94 percent) than those from other programs (85 percent).

Although participants were largely satisfied with the pace of learning in TBL programs, they appeared to be more apprehensive about the relative ease of learning content in a TBL format rather than a traditional format. About 88 percent of survey respondents either agreed or strongly agreed that they were satisfied with the pace of learning, but 35 percent thought that learning content through TBL was harder than learning though traditional means (that is, they agreed or strongly agreed with the statement that online or TBL course content was more difficult to understand than that in a traditional classroom). Respondents in longer TBL training programs were more likely to be dissatisfied with the pace of learning (16 percent) than respondents in short (7 percent) or mid-length (10 percent) programs.

Opinions about whether course content was more difficult to understand through TBL than traditional classrooms also did not vary by participant type or program duration, but they appeared to vary by instructional model and credential offered. Respondents in blended programs and the classroom-based program were more likely than those in online programs to agree that TBL content was more difficult (36 versus 32 percent). Respondents from programs that offered degrees were more likely to strongly agree that TBL content is more difficult to understand (10 percent) than respondents from programs that offered other credentials.

Table IV.3a. Satisfaction with Program Format, by Participant Characteristics

		Preprogram Employment		Gender		Preprogram Education Level			Age			Race	
	Total	Employed	Not Employed	Male	Female	HS/GED	College	Graduate Degree	18–24	25–44	45 and Older	Black	White
Sample Size	**710**	**451**	**248**	**218**	**401**	**132**	**329**	**243**	**71**	**256**	**175**	**157**	**307**
Program a Convenient Way to Participate in Training													
Strongly agreed	47.7	48.1	46.8	52.0	46.7	37.2	52.2	45.4	52.9	48.1	53.4	36.8	55.2
Agreed	46.0	46.2	45.4	42.3	46.2	55.5	44.2	44	39.7	45.4	42.1	54.0	39.7
Disagreed	4.2	3.8	4.9	2.4	5.4	6.1	1.5	7.7	3.7	4.5	1.1	5.3	2.7
Strongly disagreed	2.2	1.9	2.9	3.3	1.7	1.2	2.1	2.8	3.7	2.0	3.4	3.9	2.3
F-test for distributions		0.5		1.6		1.2			1.3			2.3	
Program Provided Flexibility with Life													
Strongly agreed	47.3	47.6	46.7	49.1	47.7	42.2	48.9	47.3	53.6	46.6	48.1	40.5	48.7
Agreed	42.6	43.0	41.9	39.5	42.0	47.3	41.9	41.6	32.9	40.6	44.2	51.3	38.7
Disagreed	7.2	6.6	8.4	8.1	7.5	10.4	7.4	5.3	7.5	9.8	5.0	7.8	8.2
Strongly disagreed	2.8	2.7	3.0	3.3	2.9	0.0	1.8	5.9	6.1	3.0	2.6	0.4	4.5
F-test for distributions		0.1		1.3		0.7			1.0			0.7	
Felt Part of a Learning Community													
Strongly agreed	39.5	35.3	48.2	42.6	38.0	40.3	44.7	30.0	55.9	39.7	43.1	45.7	45.9
Agreed	46.7	50.4	39.1	44.0	47.9	42.8	43.2	54.9	31.1	48.0	44.3	44.4	40.2
Disagreed	10.1	9.4	11.6	10.3	9.3	13.8	8.4	11.2	6.6	8.6	9.6	5.4	9.3
Strongly disagreed	3.7	4.9	1.1	3.2	4.7	3.2	3.7	3.9	6.3	3.7	2.9	4.5	4.6
F-test of distributions		4.9†		0.2		2.2			0.8			1.3	
Student-to-Student Interaction Frequency Satisfactory													
Strongly agreed	34.5	32.1	39.4	39.1	32.3	26.4	40.1	28.9	44.2	40.4	32.8	37.3	40.1
Agreed	53.4	55.8	48.3	52.2	53.8	59.9	49.9	56.0	46.9	49.8	52.5	50.4	48.9
Disagreed	9.2	9.2	9.1	7.3	9.7	11.1	7.2	11.6	4.4	7.8	11.6	7.4	8.3
Strongly disagreed	3.0	2.9	3.1	1.4	4.2	2.6	2.8	3.5	4.4	1.9	3.2	4.9	2.7
F-test of distributions		2.3		0.9		1.3			1.3			1.3	
Satisfied with the Pace of Learning													
Strongly agreed	32.6	30.1	38.1	27.0	37.2	35.9	30.2	35.2	23.8	32.9	38.7	33.4	30.8
Agreed	54.9	59.4	45.3	62.1	48.1	51.1	58.4	50.9	64.9	56.3	46.4	57.5	54.5
Disagreed	10.7	9.7	12.9	9.4	12.4	11.7	9.4	12.6	11.3	8.5	12.9	7.5	11.7
Strongly disagreed	1.7	0.8	3.7	1.5	2.3	1.4	2.1	1.3	0.0	2.3	2.1	1.6	3.0
F-test for distributions		1.7		2.8		0.8			0.9			1.2	
Online or TBL Course Content More Difficult to Understand than in Traditional Classroom													
Strongly agreed	6.1	5.5	7.5	4.7	7.9	4.6	5.3	8.4	6.6	7.9	4.6	4.1	5.2
Agreed	29.1	30.2	26.7	25.4	32.0	28.3	27.3	32.7	21.3	32.9	22.1	33.1	28.5
Disagreed	42.6	40.1	48.0	46.6	37.7	46.9	42.6	40.3	40.8	39.3	45.3	39.4	41.9
Strongly disagreed	22.2	24.2	17.8	23.3	22.4	20.2	24.9	18.6	31.3	20.0	28.0	23.5	24.4
F-test for distributions		2.2		0.5		0.1			1.7			0.2	

Source: Participant survey.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions. See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

Table IV.3b. Satisfaction with Program Format, by Program Characteristics

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 weeks	6 weeks to 6 months	6 months to 2 years	None	Certificate	License	Degree	Multiple
Sample Size	**710**	**185**	**45**	**480**	**241**	**202**	**267**	**20**	**486**	**49**	**112**	**43**
Program a Convenient Way to Participate in Training												
Strongly agreed	47.7	47.3	55.0	47.4	40.0	59.9	43.4	72.2	46.2	55.7	43.3	35.1
Agreed	46.0	47.3	45.0	45.6	53.5	36.8	48.5	22.2	48.8	38.2	45.7	59.6
Disagreed	4.2	3.2	0.0	4.6	4.3	2.3	5.2	2.8	2.9	6.1	8.1	3.6
Strongly disagreed	2.2	2.1	0.0	2.3	2.1	1.0	2.9	2.8	2.1	0.0	2.9	1.7
F-test for distributions			0.4			1.6		1.3				
Program Provided Flexibility with Life												
Strongly agreed	47.3	43.6	50.0	48.2	39.8	57.4	44.3	83.3	46.2	42.5	42.1	29.8
Agreed	42.6	49.7	37.5	41.1	52.3	37.2	42.2	16.7	45.2	44.7	41.4	56.4
Disagreed	7.2	6.5	12.5	7.1	7.6	5.0	8.4	0.0	7.0	10.5	8.1	12.1
Strongly disagreed	2.8	0.2	0.0	3.6	0.2	0.4	5.2	0.0	1.6	2.2	8.3	1.7
F-test for distributions			0.7			2.5				1.2		
Felt Part of a Learning Community												
Strongly agreed	39.5	28.2	67.5	40.7	36.3	56.7	30.6	63.9	40.9	49.6	27.4	24.6
Agreed	46.7	54.2	30.0	45.8	50.4	38.4	50.2	36.1	45.7	36.0	51.5	59.6
Disagreed	10.1	12.4	2.5	10.0	8.2	4.0	14.4	0.0	10.2	8.8	13.6	14.0
Strongly disagreed	3.7	5.2	0.0	3.5	5.1	0.9	4.8	0.0	3.2	5.7	7.6	1.7
F-test for distributions			1.7			2.4				0.6		
Student-to-Student Interaction Frequency Satisfactory												
Strongly agreed	34.5	19.9	61.5	36.6	23.4	48.8	30.1	58.3	32.8	38.2	29.6	26.4
Agreed	53.4	64.8	35.9	51.5	61.2	45.0	55.4	36.1	53.9	53.5	57.7	59.6
Disagreed	9.2	10.6	2.6	9.2	8.8	5.0	11.8	5.6	9.3	8.3	8.3	14.0
Strongly disagreed	3.0	4.8	0.0	2.7	6.6	1.2	2.7	0.0	4.0	0.0	4.4	0.0
F-test for distributions			2.0			3.4†				0.1		
Satisfied with the Pace of Learning												
Strongly agreed	32.6	41.8	55.0	28.9	39.3	31.9	30.6	16.7	40.9	36.8	23.6	19.7
Agreed	54.9	52.4	40.0	56.4	53.7	58.6	53.1	80.6	49.9	39.0	55.6	62.7
Disagreed	10.7	5.7	5.0	12.4	5.9	7.1	14.7	2.8	7.5	15.2	20.8	14.2
Strongly disagreed	1.7	0.2	0.0	2.2	1.0	2.4	1.6	0.0	1.6	9.0	0.0	3.5
F-test for distributions			2.0			4.9†				1.8		
Online or TBL Course Content More Difficult to Understand than in Traditional Classroom												
Strongly agreed	6.1	1.3	12.8	7.0	4.2	6.6	6.6	5.6	5.6	4.4	9.7	3.6
Agreed	29.1	30.6	23.1	29.1	28.0	17.3	36.6	11.1	29.7	23.2	34.9	36.5
Disagreed	42.6	42.9	41.0	42.6	43.4	47.2	39.6	38.9	44.1	53.5	32.9	51.0
Strongly disagreed	22.2	25.2	23.1	21.3	24.4	29.0	17.2	44.4	20.6	18.8	22.5	8.9
F-test for distributions			6.9†			1.8				3.3†		

Source: Participant survey.

Note: See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

D. Ease of Technology Use

Technology is by definition an important part of TBL programs. Its accessibility and ease of use can affect how students absorb or learn content, as well as how easily they can complete course requirements at an adequate pace. The participant survey captured six dimensions of the ease of technology use, all of which were captured by how strongly the respondent agreed with the statements that (1) the online or technology-based portion of the course took too much time, (2) it was easy to use the online portion of the course, (3) existing computer skills were adequate, (4) they had sufficient access to computers, (5) technical or computer difficulties affected learning, and (6) adequate support for technical or computer problems was provided. Overall, survey respondents were satisfied with their experience accessing and using the technology-based portions of their program, although the time students needed to invest in using it seemed to be an issue, and technical difficulties affected learning for a sizable share of respondents (Table IV.4).

One potential disadvantage of using the internet or technology in an educational context is the amount of additional time that it could take to set up access or to use the technology, although most respondents to the participant survey (79 percent) did not feel the technology-based portion of the program took too much time. Perspectives were similar across different participant types and credentials offered in the program, but varied by instructional model and program duration. Respondents in online-only programs were more likely than those in other programs to say that the online or TBL portion of their course took too much time, with 25 percent of respondents either agreeing or strongly agreeing with the statement. A higher percentage of respondents in the shortest TBL programs felt that the TBL portion took too much time (27 percent) than in longer programs (20 percent in mid-length and 19 percent in long programs). Furthermore, survey respondents largely agreed that the online portion of their TBL course was easy to use. More than 90 percent of respondents either strongly agreed or agreed that this was the case. The perspective varied only by participant gender, with females more often saying that the online portion was not easy to use (3 percent, compared to less than 1 percent of males).

Participant comfort with using computers can potentially affect the quality of learning, and ETA encouraged programs to provide sufficient support for participants who lacked adequate computer skills. Most survey respondents felt their existing computer skills were adequate for participating in the program (93 percent agreed or strongly agreed).

The perceived adequacy of existing computer skills seemed to vary with age and credentials offered. Participants older than age 25 more often said they had adequate computer skills than younger students. Fifty-nine percent of the 25- to 44-year-old group strongly agreed that their skills were adequate, compared to only 49 percent of younger participants (Table IV.4a). Respondents from licensing programs were less likely than respondents in other credential program groups to feel their skills were adequate for the program, with 20 percent strongly disagreeing or disagreeing with the statement that existing computer skills were adequate (Table IV.4b). Both licensing programs were designed for people who had experience in the nursing industry but whose licenses had expired. If these people had been out of the labor market for some time, they might have lacked computer skills.

Access to a computer is critical to completing TBL courses that use computer technology, and nearly all survey respondents (96 percent) felt they had enough access to computers to participate fully in the technology-based portion of their program (Table IV.4).[13] Respondents in the longest programs (Table IV.4b) felt stronger than other program duration groups that their access was sufficient (64 percent, compared to 42 percent in short programs), which might be because they had higher rates of reporting the use of their own computers (Table III.3).

Even if participants have the requisite computer skills and access to technology, technical difficulties could present a challenge for TBL programs, especially if support to overcome the problems is not provided. About 30 percent of survey respondents reported technical problems that affected their learning during the program. Respondents in the classroom-based program were the least likely to report difficulties (83 percent did not have difficulties), but that program delivered instruction using videoconferencing technology that is relatively low-tech. A larger share of respondents in degree programs reported more technical difficulties than in other programs (36 percent), perhaps because they tend to be longer. Still, nearly 90 percent of respondents felt their program gave them adequate support for technical problems. This high level of support did not vary by participant type, program duration, or credential offered. It did vary by program type, however, because respondents in the classroom-based program were the group that felt they received adequate technical support when problems arose (95 percent).

[13] As discussed in Chapter III, participants used a variety of computers to access their TBL course, including personal computers, program computers, and computers at work.

Table IV.4a. Ease of Technology Use, by Participant Characteristics

		Preprogram Employment		Gender		Preprogram Education Level			Age			Race	
	Total	Employed	Not Employed	Male	Female	HS/GED	Associates Degree or Some College	College or More	18–24	25–44	45 and Older	Black	White
Sample Size	**710**	**451**	**248**	**218**	**401**	**132**	**329**	**243**	**71**	**256**	**175**	**157**	**307**
Online or Technology-Based Portion Took Too Much Time													
Strongly agreed	4.4	4.0	5.1	3.0	5.8	1.6	4.6	4.1	4.6	1.7	6.1	5.4	4.9
Agreed	16.3	15.1	18.7	17.5	14.3	29.1	16.8	16.4	15.7	14.2	16.3	17.0	14.9
Disagreed	51.3	53.7	46.1	45.6	56.7	49.5	50.2	49.8	54.4	52.4	49.7	53.4	48.1
Strongly disagreed	28.1	27.1	30.1	33.9	23.2	19.8	28.3	29.7	25.2	31.7	27.8	24.3	32.1
F-test for distributions		0.6		2.1		0.8			0.9			1.2	
Easy to Use Online Portion													
Strongly agreed	42.8	43.2	41.9	46.2	41.8	29.7	31.0	47.0	41.5	44.5	44.7	37.4	46.0
Agreed	48.1	48.1	48.1	44.8	49.9	54.3	55.8	45.8	48.1	45.3	47.7	53.2	44.8
Disagreed	7.2	6.9	7.9	8.4	5.1	16.0	10.3	5.7	8.3	9.5	5.7	5.8	7.9
Strongly disagreed	1.9	1.8	2.1	0.6	3.2	0.0	2.9	1.5	2.1	0.7	1.9	3.7	1.3
F-test for distributions		0.4		3.1†		0.8			0.6			1.6	
Existing Computer Skills Adequate													
Strongly agreed	48.1	49.2	45.8	57.9	43.4	37.3	33.1	52.0	49.1	58.5	54.0	48.1	53.9
Agreed	44.8	44.9	44.5	37.8	48.9	48.1	52.2	42.2	45.3	37.2	43.4	42.6	40.2
Disagreed	5.1	4.4	6.5	3.4	5.7	7.3	9.3	4.3	4.2	1.4	1.9	7.5	4.3
Strongly disagreed	2.0	1.5	3.1	0.9	2.1	7.3	5.3	1.5	1.3	2.9	0.7	1.8	1.6
F-test for distributions		1.5		1.0		1.3			2.4†			1.9	
Had Sufficient Computer Access													
Strongly agreed	58.2	58.7	57.0	65.0	55.8	50.5	49.0	60.9	58.1	63.0	63.1	54.9	62.1
Agreed	38.2	38.4	37.7	31.9	40.0	49.5	44.0	37.2	36.9	32.8	34.5	42.8	33.9
Disagreed	2.8	2.4	3.6	2.2	3.3	0.0	3.9	1.7	4.0	1.4	1.7	2.3	2.8
Strongly disagreed	0.9	0.5	1.8	0.9	0.9	0.0	3.1	0.1	1.1	2.9	0.7	0.0	1.2
F-test for distributions		0.6		0.6		0.4			1.2			0.7	
Technical or Computer Difficulties Affected Learning													
Strongly agreed	5.7	4.0	9.2	6.2	5.2	5.1	5.3	6.3	4.9	5.6	7.0	5.6	6.2
Agreed	23.7	25.3	20.2	19.7	26.3	30.6	25.3	20.4	28.4	25.7	20.2	20.7	20.5
Disagreed	43.6	44.7	41.2	42.5	43.3	51.8	44.8	44.4	41.6	26.3	48.9	42.8	43.2
Strongly disagreed	27.1	26.0	29.4	31.7	25.2	12.5	24.6	29.0	25.2	42.4	23.9	30.9	30.1
F-test for distributions		2.0		0.8		0.9			0.9			0.2	
Adequate Support for Technical or Computer Problems Provided													
Strongly agreed	39.9	37.0	46.0	43.9	36.6	33.0	40.4	43.0	34.2	54.8	38.6	38.6	40.2
Agreed	48.7	51.1	43.5	48.8	47.7	56.1	52.1	47.1	49.7	34.3	51.1	49.8	45.8
Disagreed	9.2	9.7	8.3	5.8	12.9	7.3	6.3	7.6	13.6	7.1	8.7	10.4	11.0
Strongly disagreed	2.2	2.3	2.2	1.5	2.8	3.6	1.2	2.4	2.5	3.7	1.6	1.2	3.1
F-test for distributions		1.1		1.1		2.0			1.2			0.1	

Source: Participant survey.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

Table IV.4b. Ease of Technology Use by Program Characteristics

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 weeks	6 weeks to 6 months	6 months to 2 years	None	Certificate	License	Degree	Multiple
Sample Size	**710**	**185**	**45**	**480**	**241**	**202**	**267**	**20**	**486**	**49**	**112**	**43**
Online or Technology-Based Portion Took Too Much Time												
Strongly agreed	4.4	4.2	2.7	4.5	5.8	6.3	2.7	5.6	4.1	4.4	2.8	7.3
Agreed	16.3	20.5	8.1	15.6	21.5	13.4	16.0	11.1	17.5	19.8	12.7	20.2
Disagreed	51.3	48.6	62.2	51.4	45.6	43.1	58.2	22.2	52.8	52.6	60.5	54.4
Strongly disagreed	28.1	26.7	27.0	28.5	27.2	37.2	23.1	61.1	25.6	23.2	24.1	18.1
F-test for distributions			4.9†			2.7†				1.5		
Easy to Use Online Portion												
Strongly agreed	42.8	44.2	43.6	42.3	36.3	54.0	38.7	77.1	41.0	42.1	39.9	23.5
Agreed	48.1	52.0	53.8	46.7	55.6	37.8	51.3	20.0	49.3	42.5	51.9	65.5
Disagreed	7.2	2.7	0.0	8.9	6.5	5.3	8.7	2.9	6.7	11.0	8.1	11.0
Strongly disagreed	1.9	1.2	2.6	2.0	1.6	3.0	1.4	0.0	3.0	4.4	0.0	0.0
F-test for distributions			0.6			2.4				0.2		
Existing Computer Skills Adequate												
Strongly agreed	48.1	45.5	52.5	48.5	36.6	53.2	49.5	58.3	46.2	39.5	56.5	36.8
Agreed	44.8	48.5	42.5	43.9	52.5	36.9	46.4	30.6	46.7	40.3	43.0	54.3
Disagreed	5.1	4.8	2.5	5.3	7.3	8.1	2.5	8.3	4.8	18.0	0.5	5.3
Strongly disagreed	2.0	1.2	2.5	2.2	3.6	1.8	1.6	2.8	2.3	2.2	0.0	3.6
F-test for distributions			1.6			2.0		2.8†				
Had Sufficient Computer Access												
Strongly agreed	58.2	47.8	61.5	60.6	41.5	59.2	63.9	69.4	54.9	54.3	69.1	45.7
Agreed	38.2	49.4	35.9	35.4	54.0	35.1	34.0	19.4	41.2	39.0	30.9	54.3
Disagreed	2.8	2.6	0.0	3.0	3.9	4.4	1.4	8.3	2.8	6.7	0.0	0.0
Strongly disagreed	0.9	0.2	2.6	1.0	0.6	1.3	0.7	2.8	1.1	0.0	0.0	0.0
F-test for distributions			0.7			3.3†				0.5		
Technical or Computer Difficulties Affected Learning												
Strongly agreed	5.7	4.9	7.5	5.8	7.6	4.6	5.5	2.8	6.3	4.0	7.0	3.4
Agreed	23.7	24.8	10.0	24.2	21.5	21.3	25.9	27.8	20.4	20.2	29.2	28.2
Disagreed	43.6	42.6	30.0	44.7	42.9	41.2	45.2	38.9	41.4	52.5	42.0	57.9
Strongly disagreed	27.1	27.7	52.5	25.4	27.9	32.9	23.4	30.6	31.9	23.3	21.8	10.5
F-test for distributions			8.2†			1.2				5.0†		
Adequate Support for Technical or Computer Problems Provided												
Strongly agreed	39.9	36.4	51.3	40.1	38.4	42.1	39.1	36.1	43.5	41.7	38.4	26.4
Agreed	48.7	54.1	43.6	47.6	54.2	47.8	47.1	52.8	46.3	45.3	47.1	61.5
Disagreed	9.2	8.3	2.6	9.9	5.8	7.4	11.6	8.3	8.2	10.8	11.6	10.5
Strongly disagreed	2.2	1.2	2.6	2.5	1.6	2.8	2.2	2.8	2.0	2.2	2.9	1.7
F-test for distributions			3.6†			1.1				1.4		

Source: Participant survey.

Note: See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

E. Benefits of TBL

The participant survey captured four dimensions of the benefits of TBL programs, by how strongly the respondent agreed with the statements that they: (1) learned something new from the program, (2) gained or enhanced skills, (3) helped achieve their goals, and (4) would consider taking TBL courses in the future. Overall, most participants felt that their TBL program was a useful learning tool, but a smaller number were confident it would help them advance their career (Table IV.5).

ETA sponsored the TBL initiative with the goal of participants in TBL programs learning new skills, or enhancing existing ones, through their participation. Nearly all (96 percent) survey respondents strongly agreed or agreed that they learned something new in their TBL program. A similar percentage (94 percent) strongly agreed or agreed that their program helped them gain or enhance skills. Perceived skill development varied with instructional model and program duration, however (Table IV.5b). Respondents in blended programs and the classroom-based program appeared more confident about learning something new than participants in online-only programs, as did respondents in the longest programs. A greater percentage of participants in blended programs and the classroom-based program agreed, as opposed to strongly agreed, with the statement that they learned something new (more than 55 percent, versus 34 percent). Furthermore, more than 60 percent of respondents in the longest TBL programs strongly agreed with the statement that they learned something new, compared to 39 percent in the shortest programs and 49 percent in mid-length programs, and a higher percentage of respondents in the mid-length and longer programs strongly agreed that the program helped them gain or enhance skills (56 and 54 percent, respectively) than those in short programs (35 percent).

Survey respondents were somewhat less enthusiastic overall about the potential for the TBL experience to advance their careers, perhaps because many TBL programs (such as the CATS program and programs that helped registered nurses reinstate their licenses) were geared more toward skill maintenance than toward providing a new set of skills for moving participants to more highly qualified or management positions. Forty percent strongly agreed that the knowledge they acquired would help them advance in their career, but 13 percent disagreed and 3 percent strongly disagreed that this would happen. Significant variation existed across instructional model, program duration, and credential offered, however.

- Respondents from online-only programs were generally less enthusiastic about the potential benefit for their career. Only 27 percent strongly agreed that the program would help their career, compared to 46 percent in the classroom-based program and 43 percent in blended programs. Respondents in online-only programs were also less likely to feel that they learned something new from their program, which may contribute to their feelings that the program had less of an impact on their careers.
- Participants from the longest TBL programs and degree-granting programs were more likely to feel strongly about the potential benefit to their careers. Nearly half (48 percent) of those in the longest programs felt strongly about the benefit to their career, compared to 31 percent of those in shorter TBL programs. Similarly, 52 percent in degree programs strongly agreed that the programs would benefit their career, compared to 17 percent in a no credential program and 39 percent in certificate programs.

Still, most participants were positive about their TBL experience and would consider taking another TBL course in the future (93 percent agreed or strongly agreed). Respondents from online-only programs were more likely to anticipate taking another TBL course; only 3 percent replied that they would not consider it, compared to 13 percent of respondents in the classroom-based program and 8 percent of respondents in blended programs.

Table IV.5a. Benefits of TBL and Potential for Future, by Participant Characteristics

		Preprogram Employment		Gender		Preprogram Education Level			Age			Race	
	Total	Employed	Not Employed	Male	Female	HS/GED	Associate's Degree or Some College	College or More	18–24	25–44	45 and Older	Black	White
Sample Size	**710**	**451**	**248**	**218**	**401**	**132**	**329**	**243**	**71**	**256**	**175**	**157**	**307**
Learned Something New from Program													
Strongly agreed	53.1	52.9	53.6	56.8	51.1	46.9	53.5	55.6	43.5	58.7	49.8	55.6	50.0
Agreed	42.8	43.0	42.3	40.0	44.4	46.0	43.2	40.4	51.1	37.2	46.0	40.8	45.7
Disagreed	2.8	2.6	3.3	2.6	3.1	4.8	2.5	2.4	5.4	3.0	2.5	1.8	3.9
Strongly disagreed	1.3	1.5	0.8	0.6	1.4	2.3	0.8	1.5	0.0	1.1	1.6	1.8	0.3
F-test for distributions		0.3		1.0			0.4			1.3		1.6	
Program Helped Gain or Enhance Skills													
Strongly agreed	51.2	50.5	52.9	54.4	49.7	41.8	55.6	48.5	62.2	56.5	47.4	50.5	53.9
Agreed	42.8	44.2	39.9	40.1	44.4	47.6	39.3	46.5	32.6	38.0	45.8	44.9	39.2
Disagreed	4.7	4.4	5.5	4.8	4.0	10.6	3.2	4.4	5.1	4.6	4.1	2.8	5.4
Strongly disagreed	1.2	1.0	1.7	0.6	1.9	0.0	1.9	0.6	0.0	0.9	2.7	1.8	1.5
F-test for distributions		0.6		0.5			1.6			1.0		0.3	
Program Will Help in Achieving Career Goals													
Strongly agreed	39.9	38.1	43.7	37.0	43.1	34.2	42.6	38.3	37.6	42.7	39.2	44.5	36.3
Agreed	44.4	45.8	41.4	43.5	44.9	49.9	40.0	49.2	53.3	38.0	44.6	42.6	43.5
Disagreed	12.9	13.9	10.8	16.6	9.0	14.9	14.3	9.5	9.1	15.1	13.0	10.3	16.6
Strongly disagreed	2.8	2.2	4.1	2.9	3.0	1.0	3.1	3.1	0.0	4.2	3.2	2.6	3.6
F-test for distributions		0.3		0.5			1.2			0.8		0.2	
Would Consider Taking TBL Courses in Future													
Strongly agreed	46.4	45.5	48.4	47.8	47.1	41.5	50.7	41.6	55.1	45.9	50.7	41.9	47.2
Agreed	46.7	48.6	42.6	44.8	47.8	46.6	43.7	51.7	37.5	49.4	44.4	52.3	47.2
Disagreed	5.6	4.7	7.6	6.2	3.6	10.1	4.6	5.0	6.7	4.0	3.3	3.7	4.4
Strongly disagreed	1.3	1.3	1.4	1.3	1.5	1.8	1.0	1.7	0.7	0.7	1.7	2.1	1.2
F-test for distributions		1.2		2.3			1.2			0.8		0.4	

Source: Participant survey.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

Table IV.5b. Benefits of TBL and Potential for Future, by Program Characteristics

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 weeks	6 weeks to 6 months	6 months to 2 years	None	Certificate	License	Degree	Multiple
Sample Size	**710**	**185**	**45**	**480**	**241**	**202**	**267**	**20**	**486**	**49**	**112**	**43**
Learned Something New from Program												
Strongly agreed	53.1	33.7	55.3	58.1	38.8	48.8	61.1	50.0	50.9	52.2	60.2	54.6
Agreed	42.8	62.7	42.1	37.6	56.6	47.2	34.9	47.2	46.1	37.1	35.3	38.4
Disagreed	2.8	2.2	2.6	3.0	3.2	2.8	2.7	0.0	2.2	10.7	3.4	3.4
Strongly disagreed	1.3	1.4	0.0	1.3	1.4	1.2	1.3	2.8	0.8	0.0	1.0	3.6
F-test for distributions		4.5†			3.8†			1.3				
Program Helped Gain or Enhance Skills												
Strongly agreed	51.2	27.6	57.9	57.1	34.9	54.3	55.6	74.3	47.1	56.2	50.3	49.3
Agreed	42.8	65.1	42.1	37.0	58.9	41.1	37.8	25.7	46.9	33.5	42.9	43.7
Disagreed	4.7	5.9	0.0	4.7	4.7	3.5	5.5	0.0	5.2	5.8	5.2	5.3
Strongly disagreed	1.2	1.4	0.0	1.2	1.5	1.1	1.1	0.0	0.8	4.5	1.6	1.7
F-test for distributions		2.2			3.1†			0.9				
Program Will Help in Achieving Career Goals												
Strongly agreed	39.9	27.0	46.2	42.9	31.1	31.1	48.4	16.7	38.7	47.8	52.1	42.0
Agreed	44.4	58.8	43.6	40.7	54.6	49.1	37.8	55.6	46.2	37.1	39.8	36.8
Disagreed	12.9	12.8	7.7	13.3	12.2	17.0	10.8	25.0	12.4	10.7	6.0	17.7
Strongly disagreed	2.8	1.4	2.6	3.1	2.2	2.9	2.9	2.8	2.7	4.5	2.1	3.4
F-test for distributions		13.9†			4.4†			2.6†				
Would Consider Taking TBL Courses in Future												
Strongly agreed	46.4	46.4	52.6	46.1	39.3	49.7	47.3	52.8	47.1	50.9	43.9	38.5
Agreed	46.7	51.0	34.2	46.2	53.9	45.3	44.7	47.2	46.4	46.9	44.8	50.9
Disagreed	5.6	1.3	10.5	6.5	5.0	3.9	6.8	0.0	5.0	2.2	9.5	8.9
Strongly disagreed	1.3	1.4	2.6	1.2	1.8	1.1	1.2	0.0	1.4	0.0	1.9	1.7
F-test for distributions		8.2†			0.8			0.2				

Source: Participant survey.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

† = Distributions are significantly different at the $p \leq 0.05$ level across listed categories.

F. Program Satisfaction and Participant and Program Characteristics

The descriptive analyses above discuss differences in program satisfaction across groups characterized by a single variable, but do not reveal which variables predict satisfaction when other variables are held constant. This is a particularly tricky issue in this study because a strong correlation exists between key variables like program duration and credential offered, where several of the longer programs are ones that offer advanced degrees. Regression analysis is used to disentangle the influence of these strongly correlated variables, although its results cannot yield causal statements. That is, it can disentangle the relationship between one variable and an outcome, holding observable variables constant, but cannot say one characteristic causes a particular outcome to change.

The regression analysis uses five ordinal, categorical variables to summarize program satisfaction and to examine the relationship between program characteristics, participant characteristics, and participant approval of programs. All variables represent satisfaction with different dimensions of one's training program, with higher values representing greater satisfaction.[14] The first captures overall program satisfaction, defined from a single survey question, and takes on values between 1 and 10.

Other variables are constructed from multiple survey questions asking individuals to assess how much they agree with several statements about the program. Positive statements are given values of one if an individual strongly disagrees, two if an individual disagrees, three if an individual agrees, and four if an individual strongly agrees. Negative statements are given values of one if an individual strongly agrees, two if an individual agrees, three if an individual disagrees, and four if an individual strongly disagrees. These variables are then grouped based on content and added together to create additional, composite variables on program satisfaction.

The second satisfaction measure captures satisfaction with one's learning community and is the composite of scores from several questions on satisfaction with instructors and peers and takes values between 6 and 24. The third captures satisfaction with technical support and takes values between 4 and 16, and the fourth captures satisfaction with TBL and takes values between 9 and 24. The fifth captures satisfaction with program outcomes and uses the six questions on satisfaction about what one gained from the program to develop an index with values between 6 and 24. Combining these measures with variables for more traditional program outcomes (see Chapter V) more fully captures the relationship between program characteristics, individual characteristics, and program efficacy.

Ordered categorical variables, such as our measures of satisfaction, can be thought of as a mix between binary and linear data. As the name suggests, these variables take on a limited number of values (each of which is considered a category), and these values can be ordered in a reasonable way. Unlike binary data, these variables can take on more than two values. Unlike linear data, the number of potential outcomes must be finite, and the distance between values does not have meaning. That is, an outcome of 3 is higher than an outcome of 2, which in turn is more than 1. But the difference between an outcome of 3 and one of 2 is not necessarily the same as the difference between 2 and 1.

[14] These indices are combined from answers to 23 questions. The structure of the indices was confirmed using factor analysis (see Appendix A for details). Answers to individual questions yield results qualitatively similar to those produced using indices. Appendix A provides detailed definitions of all measures.

An ordered probit regression is used for estimation.[15] Unlike typical probit analyses (see Chapter V for details relevant to this study), the tables presenting results of ordered probits list coefficient values in lieu of reporting marginal effects.[16] Table IV.6 presents results of the ordered probit analysis that uses the five measures of satisfaction to examine the relationship between participant, program, and labor market characteristics. Table IV.7 presents results of program satisfaction using regressions that contain more details on a participant's program experience.

Results of the ordered probit analysis that examines the relationship between program satisfaction and participant, program, and labor market characteristics suggest that program satisfaction is associated with the observable characteristics of both participants and programs (Table IV.6). Consider:

- The least educated and younger participants were less satisfied with program technical support and their learning community than more educated and older participants.
- Gender did not predict satisfaction, but those in programs not reporting gender reported higher overall satisfaction and greater satisfaction with their learning community.
- Race predicted program satisfaction. Blacks and people of races other than white rated their learning community and the TBL portion of their program higher than did whites. These differences are both large and statistically significant.

[15] Satisfaction variable j for participant i attending a program at grantee g is denoted by Y_{igj}, where Y_{igj} takes on whole numbers between n_j and N_j

$$Y^*_{igj} = \alpha_j + X_i\beta_{ij} + X_g\beta_{gj} + \varepsilon_{igj}$$

where Y^*_{igj} is an unobserved variable that determines the level of Y_{igj} by setting

$$Y_{igj} = \begin{cases} n_j \text{ if } Y^*_{igj} \le c_1 \\ nj+1 \text{ if } c_1 < Y^*_{igj} \le c_2 \\ \vdots \\ N_j \text{ if } c_{N-n} < Y^*_{igj} \end{cases}.$$

In these regressions, X_i represents individual-level characteristics, including (but not limited to) the key variables used in the descriptive analysis: race, gender, education, age, and preprogram employment. Likewise, X_g represents grantee-level characteristics and includes program duration, program model, and types of credentials offered by the program. ε_{igj} is the error term for these regressions, which is corrected for clustering at the grantee level. An ordered probit was selected instead of other models for several reasons. Due to the relatively small number of observations available, the desire for parsimony ruled out the more flexible multinomial probit and generalized ordinal logit models. A multinomial logit model was also not considered; the independence of irrelevant alternatives assumption behind this specification makes it unsuitable for ordinal data. Finally, ordinal probit and logit model produced largely similar results. Thus, a ordinal probit model is used, as probit models are favored in other sections of this report.

[16] Although marginal effects may be more intuitive, with k independent variables, one would need to report $(k+1)*(N-n+1)$ marginal effects. One needs to consider only $k+N-n+2$ coefficients using the alternative method. With relatively large values for $N-n$ and k, it makes more sense to simply report the coefficients in this analysis.

- Experience with the internet and TBL increased satisfaction. People who had previously used TBL expressed higher levels of satisfaction than did others, and participants who consider themselves to be advanced or expert internet users were more satisfied with the technical support given, perhaps because they needed less assistance.
- Program characteristics were significantly related to satisfaction. Participants were more satisfied in the classroom-based program than in blended programs (the omitted category) along all dimensions except outcomes.[17] Satisfaction levels in online programs only differed from those for blended programs about one's learning community, with those in blended programs expressing increased satisfaction.
- Satisfaction with the learning community was the only area in which program length was a significant predictor of satisfaction. Respondents in medium-length and longer programs were more satisfied than those in programs that took less than six weeks.
- The credential a program offered predicted satisfaction, although the sign and significance patterns for these variables did not imply a clear conclusion.
- Program synchronicity (measured by any sessions scheduled with an instructor and any program work done on one's own time) predicted increased satisfaction with the technology-based elements of a program, though coefficients are generally insignificant. The positive coefficient is driven mostly by the relationship between asynchronicity and satisfaction with the pace of learning.

Table IV.6. Individual, Program, and Labor Market Characteristics Associations with Program Satisfaction

	Overall Satisfaction	Satisfaction with Learning Community	Satisfaction with Technical Support	Satisfaction with TBL	Satisfaction with Outcomes
Sample Size	**664**	**647**	**654**	**647**	**484**
Individual Characteristics at Program Entry					
Employed	-0.100 (0.143)	-0.125 (0.143)	-0.047 (0.106)	-0.066 (0.128)	-0.073 (0.156)
Employed, Unemployment Pending	0.218 (0.311)	0.112 (0.186)	-0.125 (0.138)	0.049 (0.174)	0.033 (0.288)
High School or Less Education	0.030 (0.175)	-0.230* (0.097)	-0.346* (0.158)	-0.049 (0.092)	-0.118 (0.220)
College or More Education	0.007 (0.144)	-0.082 (0.151)	-0.224 (0.174)	-0.159 (0.118)	-0.149 (0.175)
Female	0.032 (0.140)	-0.214 (0.136)	-0.210 (0.116)	-0.029 (0.096)	0.153 (0.152)
Gender Missing	0.600* (0.188)	0.559* (0.245)	-0.121 (0.166)	0.110 (0.170)	0.261 (0.313)
Age 18–24	-0.372* (0.180)	-0.173 (0.178)	0.083 (0.275)	-0.083 (0.180)	-0.110 (0.202)
Age 45 and Older	0.263 (0.169)	0.034 (0.166)	-0.164 (0.103)	0.196 (0.140)	-0.125 (0.167)
Age Missing	-0.222 (0.125)	-0.219 (0.135)	0.088 (0.116)	0.116 (0.103)	-0.038 (0.153)
Black	0.498 (0.359)	0.762* (0.351)	0.443 (0.290)	1.562* (0.301)	0.121 (0.220)
Other Race	0.221 (0.261)	0.621* (0.214)	0.402 (0.217)	1.533* (0.209)	0.133 (0.203)

[17] It is unclear whether satisfaction would be higher in the average classroom-based program because the data include only one grantee that used this program model.

	Overall Satisfaction	Satisfaction with Learning Community	Satisfaction with Technical Support	Satisfaction with TBL	Satisfaction with Outcomes
Race Missing	0.235 (0.382)	0.335 (0.322)	0.322 (0.309)	1.591* (0.308)	0.209 (0.121)
Previously Used TBL	0.012 (0.113)	0.150 (0.121)	0.119 (0.116)	0.221* (0.092)	0.169 (0.125)
Internet Skill: Advanced or Expert	0.031 (0.071)	0.066 (0.096)	0.613* (0.090)	0.172 (0.094)	-0.212 (0.259)
Main PC Access for TBL					
Work	-0.352 (0.249)	0.071 (0.229)	0.063 (0.230)	0.039 (0.175)	-0.074 (0.143)
Through Training Program	-0.171 (0.175)	0.118 (0.061)	0.258 (0.163)	0.154 (0.109)	-0.201 (0.594)
Other	-0.725 (0.393)	-0.398 (0.264)	-0.452 (0.283)	-0.402 (0.321)	-0.025 (0.203)
Chi-Squared Statistic	6.27	5.98	6.89	5.33	1.17
Program Characteristics					
Program Type					
Classroom-Based	0.791* (0.140)	0.667* (0.159)	0.628* (0.122)	0.555* (0.124)	-0.120 (0.162)
Online	0.058 (0.168)	-0.265* (0.130)	0.028 (0.123)	0.221 (0.128)	-0.177 (0.147)
Chi-Squared Statistic	33.77*	24.32*	46.71*	20.51*	0.71
Program Duration					
6 Weeks to 6 Months	-0.079 (0.136)	0.559* (0.147)	-0.038 (0.103)	0.022 (0.120)	0.288 (0.167)
Over 6 Months	0.005 (0.104)	0.554 (0.166)	0.019 (0.112)	-0.004 (0.120)	0.247 (0.297)
Chi-Squared Statistic	0.45	15.31*	0.53	0.05	10.65*
Credentials Offered					
None	-0.396 (0.323)	-0.409* (0.176)	-0.083 (0.372)	0.660* (0.248)	0.258 (0.194)
License	-0.122 (0.204)	0.200 (0.196)	0.378 (0.211)	0.036 (0.210)	-0.425* (0.154)
Degree	-0.448* (0.189)	-0.302 (0.215)	0.061 (0.148)	-0.149 (0.114)	-0.414* (0.192)
Multiple Offered	-0.555* (0.169)	-0.596 (0.326)	-0.436* (0.083)	-0.435* (0.078)	0.120 (0.120)
Chi-Squared Statistic	13.97*	14.14*	35.81*	59.88*	10.23*
Instructional Timing					
Had Scheduled Sessions with Instructor	0.042 (0.114)	0.117 (0.105)	-0.018 (0.151)	0.035 (0.138)	0.275 (0.213)
Worked on Program on Own Time	0.119 (0.195)	0.072 (0.159)	0.039 (0.182)	0.443* (0.185)	0.007 (0.038)
Chi-Squared Statistic	0.43	1.37	0.11	5.86	2.24
Labor Market Characteristics					
Unemployment Rate	0.045 (0.037)	0.094* (0.036)	0.027 (0.025)	0.004 (0.026)	-0.014 (0.147)
Urban Cluster (versus Urban Area)	0.231 (0.219)	0.236 (0.246)	0.231 (0.177)	0.084 (0.118)	C

Sources: Participant survey.

Notes: All numbers reflect coefficients from ordinal probit estimations unless stated otherwise. Omitted categories are: AA, AS, or some college for education, personal computer for main access, blended for program type, duration of 0 to 6 weeks for program duration, and certificate for credentials offered. Some programs were still in progress when the survey was completed. See Appendix A for variable definitions.

C = omitted due to collinearity. (Only three grantees were not in urban areas).

* Estimate significantly different from zero at $p \leq 0.05$ level, two-tailed test.

Results of the ordered probit analysis that examines the relationship between participant satisfaction and detailed measures of a participant's experience in the program suggest that program satisfaction is associated with reported experiences in the program (Table IV.7).

- Individually, and in most cases jointly, none of the reasons for enrollment in an educational program was significantly associated with satisfaction outcomes.
- People who enrolled in TBL because of its flexibility or who preferred self-paced instruction were more satisfied. Those who used TBL because no traditional program existed also reported higher levels of satisfaction.
- The frequency of interactions with both students and instructors, online and in person, was highly significant when tested jointly in regressions predicting satisfaction with one's learning community, TBL, and outcomes, although few individual coefficients have *p*-values below 0.05. The indicator for rarely or never meeting with an instructor in person stood out as individually predictive of satisfaction, with students rating their programs, learning communities, and TBL experiences (though not the outcomes of their participation or technical support received) substantially lower when they saw their instructor on a less-than-monthly basis.

Participants reported being more satisfied (overall) when programs provided additional career-related services (such as career counseling or job placement assistance). Respondents in programs with job placement assistance, better learning communities, and skills assessments reported higher satisfaction with program outcomes. Participants in programs offering remedial instruction were less satisfied with their TBL experience.

Table IV.7. TBL Experience Measures and Program Completion in Survey Sample

	Overall Satisfaction	Satisfaction with Learning Community	Satisfaction with Technical Support	Satisfaction with TBL	Satisfaction with Outcomes
Sample Size	**647**	**630**	**637**	**630**	**471**
Reasons for Enrollment					
Reasons Chose to Enroll in Program (All That Apply)					
Upgrade Skills for Current Job	0.115	0.161	-0.373	-0.317	0.021
	(0.209)	(0.190)	(0.204)	(0.198)	(0.223)
Upgrade Skills for Another Job	-0.264	-0.014	0.010	-0.028	0.286
	(0.161)	(0.187)	(0.208)	(0.175)	(0.270)
Retrain for New Career	-0.187	-0.297	-0.235	-0.233	-0.317
	(0.190)	(0.200)	(0.217)	(0.216)	(0.339)
Suggested/Required by Employer	-0.301	-0.122	-0.260	-0.030	0.210
	(0.333)	(0.296)	(0.221)	(0.356)	(0.381)
Other	0.188	-0.133	0.412	-0.305	0.027
	(0.354)	(0.262)	(0.327)	(0.279)	(0.179)
Chi-Squared Statistic	9.32	5.34	13.34*	6.14	8.47
Reason Chose TBL Over Other Program (All That Apply)					
Distance/Transportation	-0.071	0.144	0.092	-0.162	0.227
	(0.171)	(0.130)	(0.209)	(0.104)	(0.189)
Flexibility	0.385*	0.032	0.377*	0.230*	-0.130
	(0.114)	(0.112)	(0.114)	(0.117)	(0.140)
Program Not Offered in Traditional Format	0.054	-0.009	-0.054	-0.053	0.305*
	(0.181)	(0.175)	(0.164)	(0.109)	(0.137)
Prefer Self-Paced Instruction	0.090	0.230*	0.242	0.369*	0.017
	(0.126)	(0.102)	(0.139)	(0.154)	(0.155)
Interest in Technology or the Internet	-0.160	-0.006	-0.146	-0.133	-0.205
	(0.111)	(0.086)	(0.147)	(0.121)	(0.305)
Lower Cost of TBL	-0.574	-0.822	-0.049	-0.839	0.071
	(0.391)	(0.494)	(0.333)	(0.522)	(0.305)
Other	0.306	0.322	0.856	0.242	-0.646
	(0.297)	(0.272)	(0.453)	(0.355)	(0.405)
Chi-Squared Statistic	52.95*	13.75	28.92*	48.00*	45.12*
Program Experience					
Frequency of In-Person Meetings with Instructor					
Weekly or Monthly	-0.122	-0.187	0.063	0.228	-0.226
	(0.214)	(0.157)	(0.286)	(0.169)	(0.345)
Rarely or Never	-0.514*	-0.814*	-0.247	-0.427*	0.120
	(0.254)	(0.309)	(0.315)	(0.212)	(0.286)
Frequency of In-Person Meetings with Classmates					
Weekly or Monthly	-0.030	0.102	-0.393	-0.036	0.002
	(0.214)	(0.209)	(0.292)	(0.175)	(0.303)
Rarely or Never	0.087	0.216	-0.091	0.389	-0.019
	(0.288)	(0.289)	(0.329)	(0.298)	(0.209)
Frequency of Remote Contact with Instructor					
Weekly or Monthly	-0.079	0.005	0.144	-0.226	-0.334
	(0.144)	(0.116)	(0.186)	(0.196)	(0.201)
Rarely or Never	-0.164	-0.217	-0.023	-0.189	0.148
	(0.171)	(0.187)	(0.203)	(0.188)	(0.237)
Frequency of Remote Contact with Instructor					
Weekly or Monthly	0.156	0.052	0.067	0.092	-0.226
	(0.197)	(0.205)	(0.198)	(0.196)	(0.222)
Rarely or Never	-0.074	-0.395*	-0.026	-0.164	0.029
	(0.204)	(0.170)	(0.219)	(0.170)	(0.134)
Chi-Squared Statistic (All Frequency Variables)	14.48	36.47*	13.94	31.62*	56.79*

	Overall Satisfaction	Satisfaction with Learning Community	Satisfaction with Technical Support	Satisfaction with TBL	Satisfaction with Outcomes
Other Services Received Through Program					
Assessment of skills	-0.069 (0.105)	-0.042 (0.132)	-0.287* (0.122)	-0.116 (0.109)	0.242* (0.113)
Career Counseling or Assessments	0.230* (0.100)	0.065 (0.088)	0.436* (0.157)	0.218 (0.124)	0.151 (0.195)
Basic or Remedial Instruction in Reading, Writing, or Math (Including ESL)	-0.028 (0.153)	-0.019 (0.096)	-0.059 (0.130)	-0.247* (0.115)	-0.046 (0.140)
Assistance with Program-Related Costs (for example, Child Care, Testing Fees, Transportation)	0.039 (0.141)	-0.092 (0.101)	-0.103 (0.163)	-0.069 (0.127)	0.009 (0.157)
Job Placement Assistance or Counseling	0.274* (0.128)	0.285* (0.120)	0.056 (0.159)	0.214 (0.147)	-0.027 (0.211)
Resume Writing, Interviewing, or Workplace Behavior Training/Classes	0.121 (0.179)	0.153 (0.141)	0.305* (0.129)	0.171 (0.156)	0.151 (0.226)
Other	0.153 (0.116)	0.160 (0.168)	0.285 (0.156)	0.500* (0.132)	C
Chi-Squared Statistic	22.95*	20.40*	29.35*	31.77*	10.19

Sources: Participant survey.

Notes: All numbers reflect coefficients from ordinal probit estimations unless stated otherwise. Omitted categories are: daily for contact frequency and to further educational goals for enrollment reason. Regressions also control for all variables indicating individual characteristics at program entry, program characteristics, and labor market characteristics (as in Table V.8). Some programs were still in progress at the time data were collected. See Appendix A for variable definitions

C = omitted due to collinearity.

* Estimate significantly different from zero at $p \leq 0.05$ level, two-tailed test.

G. Summary

Overall, survey respondents expressed high levels of satisfaction with their programs. Nearly three-quarters said they were satisfied with their program, and only 5 percent reported being very dissatisfied. Nearly all (more than 90 percent) would recommend their program to others who might be looking for a similar learning opportunity; believed their TBL instructor was satisfactory and provided timely feedback; said their program was a convenient way to participate in training; felt the program provided flexibility with their other life responsibilities; and thought the technology was easy to use with existing computer skills and access was sufficient to participate fully in their course. Furthermore, more than three-fourths (79 percent) did not feel the technology-based portion of the program took too much time, and nearly all said their TBL program helped them learn new skills or enhance existing ones. Perhaps most telling is the fact that 93 percent of TBL participants would consider taking another TBL course in the future.

Still, TBL programs might have room for improvement. More than one-third thought learning content through TBL was harder than learning though traditional means, with about one-fifth feeling the technology components took more time than necessary. Only about 40 percent felt the knowledge they acquired would help them advance in their career.

Furthermore, because multivariate results suggest that feeling like being part of a learning community and providing additional career-related services significantly increased satisfaction, programs might want to build support for the 15 percent of participants who said in the participant survey that they did not feel like they were part of a learning community and they were not satisfied with the level of interaction with other students.

V. PARTICIPANT OUTCOMES

The TBL initiative provided training and supportive services, with the goal of increasing the number of workers with the skills and credentials that high-growth occupations demand. This chapter considers the initiative's success by addressing the question, *What were the participants' outcomes after the TBL program?* Descriptive analyses of both administrative and survey data examine education and employment outcomes, with the two data sources providing a sensitivity analysis. Education outcomes include whether the participant completed the program and whether the participant received a degree or certificate. Employment outcomes include whether the participant entered employment (this includes people who were employed when they were enrolled) and whether the participant entered training-related employment. As in Chapters III and IV, results of descriptive analysis are presented in the aggregate for all participants and separately for participants in programs with different program characteristics (instructional models, durations, and credentials offered) and for subpopulations with at least 65 percent having information on the characteristics and at least 10 percent of the participants having the characteristic. The chapter also presents results from regression analyses of survey data that show the associations between educational (completed program, dropped out of program, and received degree, certificate, or license); employment (employed, not employed, and training-related employment); or broader labor market (log of hourly wage, weekly hours worked) outcomes and participant, program, and labor market characteristics.

A. Outcomes by Program Characteristics

Table V.1 contains key details on outcomes using measures from the administrative data (administrative sample) and the survey data (survey sample), with Table V.1a showing results disaggregated by participant characteristics and Table V.1b showing results disaggregated by program characteristics. Results using the administrative data suggest slightly better outcomes: higher rates of program completion, credential receipt, and postprogram employment.[18] Consider:

Program completion. More than two-thirds of participants (72 percent of the administrative and 69 percent of the survey sample) completed their program. Completion rates varied with program characteristics, although the nature of the variation often differs, depending on whether the administrative or survey sample is used. Consistency exists between the samples only in lower completion rates in blended programs, the longest programs, and programs having multiple credentials. The survey data allow for a closer look at the reasons a participant did not complete a course of study (Table V.2). Of those who did not complete their program, 35 percent said their program was still in process, implying that completion rates are understated, especially for the longest programs. Twenty-two percent reported they did not finish because they were too busy, and 15 percent fell too far behind in their coursework.[19] The former was particularly common for short and online programs. Respondents also often cited personal and financial problems (12 percent) and not enough instructor support (10 percent).

[18] Participants may obtain a credential without completing a training program (or complete a program and not obtain a credential), particularly if the credential is awarded by a third party, such as a licensing board.

[19] Respondents were able to select as many reasons for not completing their program as they thought were applicable (eight reasons and a write-in option were provided).

Table V.1a. Training and Employment Outcomes, by Participant Characteristics

		Preprogram Employment		Gender		Preprogram Education Level			Age			Race	
	Total	Employed	Not Employed	Male	Female	HS/GED or Less	Some College or Associates	College Degree or More	18–24	25–44	45 and Older	Black	White
Administrative Sample													
Sample Size	**14,427**	**11,120**	**1,064**	**3,215**	**6,731**	**7,612**	**1,538**	**1,488**	**1,537**	**4,851**	**3,264**	**5,390**	**3,564**
Program Outcomes													
Completed program	72.2	76.0*	68.3*	69.9	69.4*	67.8*	71.0	80.6*	63.4*	66.0*	76.2*	86.8*	65.5*
Received a degree/certificate	71.6	72.7	71.6	68.2*	73.4	69.5	83.4*	84.8*	65.2*	72.7	82.2*	81.6*	65.3*
Employment Outcomes													
Entered employment	79.0	81.3	63.1*	68.1*	87.3*	72.0*	74.1	81.0	77.1	78.8	70.2*	95.3*	70.9*
Entered training-related employment	53.4	60.9*	40.8*	48.4*	53.2	50.9	60.2	52.1	39.8*	46.8*	57.0	66.2*	47.1*
Survey Sample													
Sample Size	**689**	**451**	**248**	**218**	**401**	**132**	**329**	**243**	**71**	**256**	**175**	**157**	**307**
Program Outcomes													
Completed program	68.6	66.9	72.0	74.7	67.3	69.2	70.4	65.0	71.1	70.7	70.2	72.6	69.6
Received a degree, certificate, or credential	58.1	52.9*	68.9*	54.5	63.3	63.9	55.6	59.3	42.4	59.8	66.8	65.2	52.2
Number of credentials	1.0	0.9*	1.3*	1.1	1.0	1.4*	1.0	0.8	0.7	1.1	1.2	1.7*	0.9
Employment Outcomes													
Employed postprogram	73.3	81.3*	56.5*	78.5	71.5	70.4	72.5	76.3	76.8	76.6	74.0	72.0	76.2
Entered training-related employment	44.7	51.6*	30.4*	38.5	53.7*	37.8	38.3	59.3	31.5	49.6*	50.9	34.5*	47.6*
Postprogram job same as preprogram job	34.1	50.5*	0.0*	33.1	39.3*	21.4*	32.0	44.4*	15.1*	43.8*	34.4	35.5	37.1

Sources: Administrative data (TBL population) and participant survey (survey sample).

Notes: All numbers reflect percentages unless stated otherwise. Survey sample only includes people not enrolled in the program when they completed the survey. Number and type of degrees, certificates, or credentials is computed only for people who have received them from the program. See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

* = Significantly different from the overall mean $p \leq 0.05$ level, two-tailed *t*-test.

† = Distributions are significantly different across categories at the $p \leq 0.05$ level, *f*-test.

Credential attainment. More than half (72 percent administrative sample and 58 percent survey sample) earned a credential through their TBL program, whether it was a degree, an occupational license, or a skills certificate (Table V.1a). Once again, rates varied with program characteristics, although the nature of the variation often differed, depending on whether the administrative or survey sample is used. Consistency exists only in higher rates for the classroom-based program and programs preparing individuals to be licensed.

Employment outcomes. One goal of the TBL initiative was to employ people in sectors with high labor demand, captured in this study as employment and employment in a training-related field after participation. Overall, about three-quarters of participants were employed after program participation (79 percent of the administrative sample and 73 percent of the survey sample), with both administrative and survey data showing lower rates of employment for the longest programs. Employment outcomes in both data sources show increases in employment from pre- to postprogram, with rates going from 56 percent before enrollment to 79 percent after enrollment in the administrative data and from 65 to 73 percent in the survey data (both statistically significant changes).[20] The improvements are substantial, particularly given the difficult economic climate during the survey period. Between 45 (survey sample) and 53 percent (administrative sample) of employed participants had a job in the sector of their training, with both administrative and survey data suggesting that the classroom-based program and programs associated with eventual licenses had higher rates. Participants in blended programs, those not employed before program participation, and males had lower rates.

[20] Preprogram numbers are take from Tables III.6 (administrative sample) and III.7 (survey sample).

Table V.1b. Employment and Training Outcomes at Exit, by Program Characteristics

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Number of Programs	21	4	1	16	4	11	6	2	11	2	4	2
Number of Grantees	20	4	1	15	4	10	6	2	11	2	4	2
Administrative Sample												
Sample Size	**14,427**	**11,668**	**155**	**2,604**	**11,041**	**1,322**	**2,064**	**187**	**13,051**	**264**	**682**	**243**
Program Outcomes												
Completed program	72.2	94.5*	85.1*	67.7*	99.8*	81.3*	56.0*	69.2	87.6*	74.3	56.2*	25.5*
Received a degree/certificate	71.6	68.5*	79.6*	71.8	100.0*	86.8*	56.2*	86.1*	75.9*	100.0*	67.4*	24.1*
Employment Outcomes												
Entered employment	79.0	100.0*	84.1	74.8*	100.0*	72.8*	73.6*	45.8*	81.1	88.1*	93.7*	67.2*
Entered training-related employment	53.4	86.8*	85.3*	40.8*	80.2*	62.2*	37.0*	35.3	54.8*	82.4	85.1*	31.5
Survey Sample												
Sample Size	**710**	**185**	**45**	**480**	**233**	**195**	**261**	**20**	**486**	**49**	**112**	**43**
Program Outcomes												
Completed program	68.6	72.4	92.5*	66.1*	67.1	86.9*	58.3*	97.2*	65.9	83.8*	65.6	50.7*
Received a degree, certificate, or credential	58.1	56.9	87.5*	56.6	62.1	61.9	54.2	38.9	59.1	79.9*	63.6	49.0
Number degrees, certificates, or credentials	1.0	1.6*	1.0	0.9*	1.8*	1.0	0.8*	0.4*	1.3*	0.8	0.7*	0.7*
Employment Outcomes												
Employed Postprogram	73.3	76.5	79.5	72.1	75.9	78.9	69.1*	94.4*	71.7	74.1	67.2	71.9
Entered training-related employment	44.7	58.4*	61.5*	40.2*	49.9	41.5	44.6	38.9	40.1	60.1*	56.7*	43.6
Postprogram job same as preprogram job	34.1	53.6*	12.2*	30.3*	40.5	37.1	29.9	58.3	31.5	10.5	40.5	24.4

Sources: Administrative data from TBL grantees (administrative sample) and participant survey (survey sample).

Note: All numbers reflect percentages unless stated otherwise. Samples include only individuals who have exited the program at the time of data collection. Number and type of degrees, certificates, or credentials are computed only for individuals who received them. In the administrative sample, some programs categorized as offering no formal credential reported that participants received some certificate, license, or degree. These programs issue certificates of completion or credentials which are not related to a specific profession and thus are not considered formal credentials in this study. See Appendix A for variable definitions.

* = Significantly different from the overall mean at the $p \leq 0.05$ level, two-tailed *t*-test.

Table V.2. Reasons Survey Respondents Gave for Not Completing Program, by Program Characteristics

		Instructional Model			Program Duration			Credential Offered				
	Total	Online Only	Classroom-Based	Blended	0 to 6 Weeks	6 Weeks to 6 Months	6 Months to 2 Years	None	Certificate	License	Degree	Multiple
Sample Size	**275**	**80**	**3**	**192**	**104**	**42**	**129**	**1**	**191**	**8**	**51**	**20**
Program Is Still in Progress	35.0	34.3	33.3	35.2	28.9	21.1	39.5*	0.0	35.1	0.0*	45.9	28.5
Too Busy	21.6	45.6*	0.0*	16.6*	41.3*	32.4	13.3*	100.0	29.0*	24.3	5.3*	10.5
Personal Problems	20.8	14.9	66.7	21.5	21.7	42.8*	16.5*	100.0	24.7	40.7	8.8*	14.2
Dropped Behind in the Coursework	14.9	11.3	66.7	15.0	14.9	28.3	12.5	100.0	11.3	40.7	7.5*	28.5
Financial Problems	11.8	21.7	0.0*	9.8	13.2	6.4	12.4	0.0	14.1	27.1	7.3	7.3
Not Enough Instructor Support	9.5	0.8*	0.0*	11.5*	3.0*	15.2	10.5	0.0	6.4	51.4*	11.9	10.8
Found a New Job	7.2	0.8*	0.0*	8.6*	6.5	11.1	6.6	0.0	10.1	0.0*	0.0*	7.3
Computer or Technical Problems	5.8	11.3	0.0*	4.6	9.0	15.2	3.0*	0.0	7.7	40.7*	0.0*	0.0*
Other	30.5	10.1*	33.3	34.9*	13.5*	38.7	34.3	0.0	25.0	59.3	31.4	46.3

Source: Participant survey.

Note: Respondents were asked to identify all reasons why they were no longer enrolled in the program. Numbers reflect the percentage of individuals who identified the reason, and may sum to more than 100 percent across all reasons. See Appendix A for variable definitions.

* = statistically different from overall mean at the $p \leq 0.05$ level, two-tailed *t*-test (not available for category indicating no credentials).

The participant survey allows for a more in-depth probing of employment outcomes for TBL participants employed at the time of surveying (Table V.3). It allows us to compare hours worked and hourly rate of pay with preprogram outcomes presented in Table III.7. This analysis shows that participants employed after program participation reported better employment outcomes than those employed before program participation.[21] On average, workers reported working slightly (but statistically insignificantly) more hours per week after training (38 compared to 37) and wages (conditional on working) increased significantly from a preprogram rate of $19.59 per hour to a postprogram rate of $21.60 per hour.[22]

Because some TBL programs targeted incumbent workers or people with expired credentials, it is perhaps not surprising that about 60 percent of workers said they had the same job postprogram that they had before the program, and 61 percent of workers held a postprogram job in the same field as their TBL program (Table V.3). Females, those with a college degree, and participants age 25 to 44 had higher rates of employment. The distribution of employment by sector is also not surprising, given the distribution of industries targeted for training.

[21] Causation cannot be inferred, in part, because a different group of people were employed before participation than were employed after participation, and the descriptive analysis does not control for differences between the groups.

[22] Wage levels after program participation demonstrate differences similar to those seen in the general population: more educated and older workers earn more, and whites earn higher wages than blacks.

Table V.3. Employment Outcomes for Survey Respondents Employed at Time of Surveying

		Preprogram Employment		Gender		Preprogram Education Level			Age			Race	
	Total	Employed	Not Employed	Male	Female	HS/GED or Less	Some College or Associates	College Degree or More	18–24	25–44	45 and Older	Black	White
Sample Size	**486**	**355**	**131**	**156**	**284**	**86**	**213**	**187**	**50**	**183**	**129**	**101**	**232**
Percentage	73.3	81.3	56.5	78.5	71.5	70.4	72.5	76.3	76.8	76.6	74	72	76.2
Hours Worked per Week													
Average	38.1	38.8	36.2	41.0*	36.0*	36.4	38.4	38.5	39.9	37.7	37.7	36.3	38.5
Minimum	1.0	2.0	1.0	1.0	2.0	1.0	9.0	2.0	9.0	1.0	12.0	5.0	2.0
Maximum	80.0	72.0	80.0	80.0	72.0	64.0	80.0	60.0	80.0	65.0	72.0	64.0	65.0
Hourly Rate of Pay													
Average	21.6	22.7*	17.8*	21.7	22.5	14.9*	18.1*	30.2*	15.8*	21.0	23.5	17.2*	19.2
Minimum	3.4	4.6	3.4	4.6	3.4	3.4	6.6	4.6	3.4	7.2	4.0	6.6	3.4
Maximum	122.6	122.6	48.1	122.6	90.0	60.1	44.1	122.6	40.0	50.0	90.0	50.0	48.5
Industry													
Advanced manufacturing	4.1	4.1	4.0	9.0	0.0	8.9	4.4	1.3	2.1	6.1	3.3	2.6	6.2
Computer automation/ robotics	2.9	3.1	2.2	1.6	0.7	2.2	4.5	0.6	3.8	0.8	0.0	2.3	1.3
Construction	2.5	1.4	6.0	5.1	0.3	5.4	2.6	1.0	0.9	2.7	3.1	8.1	0.2
Direct care for adults	6.5	6.1	7.7	4.7	7.3	22.4	5.7	0.4	4.3	5.3	11.3	18.8	4.5
Energy management	5.4	6.2	2.9	11.0	0.8	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0
Geographic information system	1.7	1.9	1.1	2.2	1.5	0.0	1.9	2.2	2.1	3.3	0.0	0.0	3.0
Information technology	9.8	8.8	12.7	15.6	2.4	8.6	7.2	14.5	6.0	7.3	7.6	5.4	10.7
Nursing	34.6	36.1	30.2	8.9	65.0	19.4	33.5	43.6	25.7	43.8	51.2	21.7	40.2
Transportation	1.3	0.8	2.5	2.3	0.2	3.5	1.4	0.0	0.0	2.0	1.0	6.3	0.0
Other	31.2	31.4	30.8	39.5	21.9	29.5	38.8	19.6	55.1	28.6	22.4	34.8	33.7
F-Test for Distribution		1.1		11.0†		2.4†			1.3			3.6†	
Employed in Field of Training	61.4	63.7	54.2	49.2*	75.7*	54.5	53.1*	78.4*	41.0	65.0	69.5	48.7*	62.7
Employed in Same Job as Preprogram	46.7	62.1*	0.0*	42.3	55.2*	30.8*	44.4	58.1*	19.7*	57.3*	46.9	49.4	49.0

Sources: Participant survey.

Notes: All numbers reflect percentages unless stated otherwise. The table includes only employed individuals, except for percentage employed. See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

* = Significantly different from the overall mean at the $p \leq 0.05$ level (not computed for minimum and maximum values).

† = Distributions are significantly different across columns at the $p \leq 0.05$ level, two-tailed *t*-test.

B. Program Outcomes and Characteristics of Participants and Programs

The descriptive analysis shows differences in program outcomes across groups characterized by a single variable but does not reveal which variables predict outcomes when other characteristics are held constant. Regression analysis is used to examine the relationship between education and employment outcomes and individual, program, and labor market characteristics. However, regression analysis requires adequate variation in outcomes, and programs reported little variation in the outcomes in the administrative data (Table V.4).[23] As a result, regression analysis cannot reasonably be used on administrative data. Fortunately, these issues are not a problem in the survey data, where people report their own outcomes.

Table V.4. Variation in Outcomes, by Grantee

Grantee	Observations in Analytic Sample	Share Completed Program	Share Received Degree or Other Credential	Share Employed After Program
A-DA	101	92.1	100.0	100.0
CSN	0	n.a.	n.a.	n.a.
Dillard	124	100.0	100.0	100.0
GCSC	56	7.1	3.6	17.4
GTC	47	100.0	100.0	89.4
HCC	6	100.0	33.3	100.0
IDCEO	0	n.a.	n.a.	n.a.
MCC	0	n.a.	n.a.	n.a.
NCTC	0	n.a.	n.a.	n.a.
NOVA	19	78.9	78.9	78.9
OC WIB	12	100.0	100.0	100.0
OWATC	134	59.7	58.7	55.1
Reno CSA	27	59.3	81.5	55.6
RF SUNY	207	100.0	100.0	100
Temple CSPCD	0	n.a.	n.a.	n.a.
TGC	4,210	100.0	100.0	100.0
UCD	66	98.5	98.5	98.5
WGU	0	n.a.	n.a.	n.a.
WTCC	0	n.a.	n.a.	n.a.
WVUP	0	n.a.	n.a.	n.a.

Source: Administrative data from TBL grantees.

Note: Analytic sample is defined as those with information on seven key variables: (1) completed training program; (2) attained degree, credential, or certificate; (3) entered unsubsidized employment; (4) entered training-related employment; (5) gender; (6) race; and (7) education at enrollment. See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

This study uses two types of regression to analyze the program outcomes: linear and binary.[24] Linear variables have continuous values and can be analyzed using ordinary least squares (OLS).[25] Two linear variables are of interest to this study: (1) hourly wages received after a program, and (2) hours worked per week (both are considered only for people employed after program participation). Binary variables take on values of 1 if an outcome occurred and 0 if it did not and are analyzed using

[23] The administrative data include outcomes as reported by grantees, and the survey data include outcomes as reported by individuals. Answers do not always match.

[24] All regressions use standard errors clustered at the grantee level.

[25] The OLS estimated equation can be written as, $Y_{igj} = \alpha_j + X_i\beta_{ij} + X_g\beta_{gj} + \varepsilon_{igj}$, where outcome variable j for participant i attending a program at grantee g is indicated by Y_{igj} and X_i is a vector of participant characteristics, X_g is a vector of grantee characteristics, and ε_{igj} is the statistical error term.

a probit regression.[26] Six binary variables are of interest: (1) program completion; (2) program dropout (defined as program not complete and not in progress at survey); (3) receipt of degree, certificate, or license through program; (4) employed after program; (5) employed full-time after program; and (6) employed in field of training after program. The marginal effects of binary probit are reported in the tables because they show the average change in the probability that the outcome occurs associated with a change in an independent variable.

1. Education Outcomes

Two sets of probit analyses of education outcomes are estimated. The first set examines associations with participant, program, and labor market characteristics (Table V.5), and the second set examines associations with specific attributes of a participant's TBL program (reasons for enrollment, program experience, and services received through the program) (Table V.6). The focus is on the associations between program characteristics and attributes that might facilitate improved education outcomes.

Results suggest that program characteristics and attributes might be associated with educational outcomes when participant and labor market characteristics are controlled for. Consider the associations with program characteristics (Table V.5):

- Participants in online programs were 18 percent more likely to complete the program and 13 percent less likely to drop out of the program than participants in blended programs.[27] However, the synchronicity of a program (if there were scheduled sessions with an instructor and/or if students worked on their own time) did not significantly influence completion rates. This suggests that instructional form may influence outcomes more than the timing of instruction; however, the close relationship between instruction type and synchronicity, and the non-causal nature of this study, makes it difficult to draw strong conclusions.
- Programs associated with degrees and licenses, as well as those not tied to a professionally recognized credential, were more often completed than those offering certificates (the baseline category). More comprehensive credentials (licenses and degrees) could be more valuable than certificates, leading to higher completion rates. Differently, programs without any associated credential could be easier to complete than

[26] An ordered probit model was used to analyze program satisfaction in Chapter IV. Analysis in this chapter uses a binary probit, which can be written as, $\Pr\left(Y_{ijg}=1 \mid X_i, X_g\right)=\Phi\left(z_{ijg}\right)=\Phi\left(\alpha_j+X_i\beta_{ij}+X_g\beta_{gj}\right)$, where Y_{ijg} = 1 if event *j* occurred for participant *i,* who attended a program provided by grantee *g*). Although this probit model allows for a more rigorous assessment of the differences among the groups than does the descriptive analysis, it has one key drawback: how to handle cases in which one of the *X* variables perfectly predicts that Y_{gj} is one or zero. This occurs if all individuals with a certain characteristic are members (or not) of a particular sample. This analysis proceeds by assuming that z_{ij} approaches positive or negative infinity if an individual has a characteristic that perfectly predicts inclusion or exclusion a group. This study's results are robust to this assumption.

[27] Classroom-based programs had a similar effect:: participants in the classroom-based program were about 16 percentage points less likely to drop out and 27 percentage points more likely to complete their program and receive a credential than participants in blended programs. We do not emphasize these results, however, because only one grantee had a classroom-only program. As a result, it is difficult to disentangle the influence of classroom-based programs from the average classroom-based TBL program.

average. A combination of these two mechanisms could generate the relationship seen between credentials and completion.

- Those who used program-provided computers were significantly more likely to complete their program and less likely to drop out. Using a computer at work for TBL was negatively associated with degree attainment.
- None of the variables identifying program preparedness (exposure to TBL, internet skills, and education) individually (or jointly, test not shown) predicts program completion, dropout, or credential attainment.

Table V.5. Participant, Program, and Labor Market Characteristics Associations with Education Outcomes

	Completed Program	Dropped Out of Program	Received Degree, Certificate, or License
Sample Size	**668**	**668**	**667**
Mean of Dependent Variable	0.69	0.20	0.59
Participant Characteristics			
Employed	-0.077	0.043	-0.118*
	(0.050)	(0.029)	(0.042)
Employed, Unemployment Pending	-0.076	0.052	0.020
	(0.080)	(0.062)	(0.076)
High School or Less Education	0.007	0.014	0.062
	(0.048)	(0.032)	(0.059)
College or More Education	-0.033	-0.004	0.028
	(0.041)	(0.036)	(0.066)
Female	-0.116*	0.041	0.014
	(0.050)	(0.041)	(0.068)
Gender Missing	-0.174	-0.031	-0.246
	(0.141)	(0.062)	(0.205)
Age 18–24	-0.054	0.016	-0.153
	(0.089)	(0.057)	(0.082)
Age 45 and Older	-0.020	0.016	0.085
	(0.046)	(0.040)	(0.046)
Age Missing	0.090	0.021	0.145
	(0.062)	(0.056)	(0.112)
Black	-0.879*	0.872*	-0.863*
	(0.058)	(0.056)	(0.047)
Other Race	-0.751*	0.627*	-0.936*
	(0.083)	(0.070)	(0.057)
Race Missing	-0.925*	0.941*	-0.886*
	(0.039)	(0.029)	(0.051)
Previously Used TBL	-0.001	0.021	-0.013
	(0.050)	(0.043)	(0.054)
Internet Skill: Advanced or Expert	0.072	-0.055	0.024
	(0.046)	(0.030)	(0.068)
Main PC Access for TBL			
Work	0.041	-0.037	-0.176*
	(0.059)	(0.040)	(0.088)
Through Training Program	0.158*	-0.071*	0.119
	(0.039)	(0.026)	(0.077)
Other	-0.051	0.116	-0.200
	(0.094)	(0.081)	(0.122)
Chi-Squared Statistic	13.09*	14.40*	18.25*
Program Characteristics			
Program Type			
Classroom-Based	0.265*	-0.162*	0.274*
	(0.018)	(0.013)	(0.103)
Online	0.179*	-0.134*	-0.000
	(0.045)	(0.027)	(0.090)
Chi-Squared Statistic	68.24*	46.97*	3.91

	Completed Program	Dropped Out of Program	Received Degree, Certificate, or License
Program Duration			
6 Weeks to 6 Months	-0.099 (0.069)	0.009 (0.062)	-0.028 (0.178)
Over 6 Months	-0.197* (0.070)	0.094* (0.035)	-0.146 (0.174)
Chi-Squared Statistic	9.08*	8.70*	0.92
Credentials Offered			
None	0.299* (0.020)	-0.178* (0.016)	-0.278 (0.272)
License	0.267* (0.016)	-0.142* (0.017)	0.144 (0.179)
Degree	0.282* (0.036)	-0.167* (0.031)	0.164 (0.156)
Multiple Offered	0.080 (0.067)	0.027 (0.094)	0.016 (0.169)
Chi-Squared Statistic	86.28*	74.19*	2.93
Instructional Timing			
Had Scheduled Sessions with Instructor	0.014 (0.045)	-0.003 (0.039)	-0.015 (0.062)
Worked on Program on Own Time	0.012 (0.067)	-0.092 (0.062)	-0.028 (0.059)
Chi-Squared Statistic	0.11	3.27	0.23
Program Industry			
Construction	0.075 (0.053)	-0.069 (0.038)	0.133 (0.081)
Energy/Information Technology	0.140 (0.082)	-0.106 (0.058)	-0.093 (0.145)
Manufacturing	0.114* (0.052)	-0.082 (0.042)	-0.034 (0.138)
Other	-0.050 (0.083)	-0.023 (0.068)	-0.253* (0.109)
Chi-Squared Statistic	6.72	5.71	6.86
Local Labor Market Characteristics			
Unemployment Rate	0.075* (0.016)	-0.022* (0.008)	0.052 (0.034)
Urban Cluster (versus Urban Area)	0.263* (0.026)	-0.186* (0.020)	0.216 (0.136)

Sources: Participant survey.

Note: All numbers reflect marginal effects from probit estimations unless stated otherwise. Omitted categories are AA, AS, or Some College for education, personal computer (PC) for PC access, blended program type, duration of 0 to 6 weeks, and health care for industry. Some programs were still in progress when data were collected. See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

* Estimate significantly different from zero at the $p \leq 0.05$ level, two-tailed test.

To delve deeper into which program components lead individuals to persist in their TBL program, the second set of probit regressions examines the associations between education outcomes and program attributes (Table V.6). Results suggest that:

- Participants who enrolled at their employer's request were 13 percent more likely to complete a program and nearly 27 percent more likely to earn a credential than those enrolling for purely educational reasons. When this measure is tested with other reasons for TBL enrollment, it does not significantly predict program completion or credential receipt, although it does predict program dropout.
- Participants in programs in which students remotely interact with instructors on a fairly regular basis were more likely to complete programs. Although most coefficients on terms for frequency of interaction with students and teachers are not individually

significant in this regression, testing the coefficients jointly yields a highly significant *f*-statistic. Similar results hold for regressions predicting dropout and credential obtainment.

- The services available through a program strongly predicted completion and dropout when tested together. Career-related skill development was particularly important. Compared to those in programs without such services, students in programs offering soft-skills training (for example, workplace behavior or interviewing) were about 17 percentage points more likely to complete a program and about 10 percent less likely than average to drop out of a program.

Table V.6. TBL Experience Measures and Program Completion in Survey Sample

	Completed Program	Dropped Out of Program	Received Degree, Certificate, or License
Sample Size	**653**	**653**	**652**
Mean of Dependent Variable	0.69	0.19	0.61
Reasons for Enrollment			
Reasons Chose to Enroll in Program			
Upgrade Skills for Current Job	-0.024 (0.058)	0.003 (0.041)	0.095 (0.069)
Upgrade Skills for Another Job	-0.075 (0.059)	0.010 (0.027)	-0.055 (0.078)
Retrain for New Career	-0.012 (0.054)	-0.015 (0.040)	0.004 (0.084)
Suggested/Required by Employer	0.134* (0.038)	-0.065* (0.022)	0.268* (0.056)
Other	-0.145 (0.082)	0.018 (0.057)	0.120 (0.114)
Chi-Squared Statistic	14.33*	5.04	18.66*
Reason Chose TBL Over Other Program (All That Apply)			
Distance/Transportation	0.079 (0.049)	-0.005 (0.026)	0.064 (0.069)
Flexibility	0.032 (0.063)	-0.055 (0.046)	0.033 (0.050)
Program Not Offered in Traditional Format	0.057 (0.060)	-0.027 (0.041)	0.121 (0.090)
Prefer Self-Paced Instruction	0.042 (0.034)	-0.039 (0.023)	-0.018 (0.059)
Interest in Technology or the Internet	0.016 (0.061)	-0.033 (0.023)	-0.044 (0.057)
Lower Cost of TBL	-0.305 (0.242)	0.170 (0.139)	-0.287 (0.222)
Other	0.106 (0.074)	-0.025 (0.045)	0.070 (0.112)
Chi-Squared Statistic	7.34	13.22	9.42
Program Experience			
Frequency of In-Person Meetings with Instructor			
Weekly or Monthly	-0.045 (0.112)	-0.031 (0.078)	-0.092 (0.123)
Rarely or Never	-0.087 (0.116)	-0.000 (0.064)	-0.116 (0.122)
Frequency of In-Person Meetings with Classmates			
Weekly or Monthly	0.052 (0.102)	0.017 (0.067)	0.123 (0.109)
Rarely or Never	-0.051 (0.120)	0.110 (0.086)	-0.080 (0.147)
Frequency of Remote Contact with Instructor			
Weekly or Monthly	0.044 (0.064)	0.020 (0.034)	0.054 (0.084)
Rarely or Never	0.073 (0.065)	-0.004 (0.039)	-0.018 (0.117)

	Completed Program	Dropped Out of Program	Received Degree, Certificate, or License
Frequency of Remote Contact with Instructor			
Weekly or Monthly	-0.137* (0.069)	-0.019 (0.048)	-0.105 (0.084)
Rarely or Never	-0.274* (0.080)	0.088 (0.063)	-0.227* (0.091)
Chi-Squared Statistic (All Frequency Variables)	46.99*	73.41*	35.66*11.55
Other Services Received Through Program			
Assessment of skills	0.002 (0.039)	0.048 (0.031)	0.072 (0.056)
Career Counseling or Assessments	-0.010 (0.050)	0.051 (0.031)	0.062 (0.065)
Basic or Remedial Instruction in Reading, Writing, or Math (Including ESL)	-0.009 (0.050)	-0.028 (0.035)	0.039 (0.059)
Assistance with Program-Related Costs (for example, Child Care, Testing Fees, Transportation)	0.003 (0.040)	0.017 (0.025)	-0.003 (0.051)
Job Placement Assistance or Counseling	-0.040 (0.044)	-0.042 (0.029)	-0.100 (0.053)
Resume Writing, Interviewing, or Workplace Behavior Training/Classes	0.166* (0.044)	-0.097* (0.026)	0.119 (0.079)
Other	0.071* (0.035)	-0.069* (0.016)	0.004 (0.105)
Chi-Squared Statistic	14.78*	21.03*	11.55

Sources: Participant survey.

Notes: All numbers reflect marginal effects from probit estimations unless stated otherwise. Omitted categories are daily for contact frequency and to further educational goals for enrollment reason. Regressions also control for all variables indicating individual characteristics at program entry, program characteristics, and labor market characteristics (as in Table V.5). Some programs were still in progress when the data were collected. See Appendix A for variable definitions.

* Estimate significantly different from zero at the 0.05 level, two-tailed test.

2. Labor Market Outcomes

Because labor market outcomes from programs often are heavily correlated with labor market outcomes before program participation, probit analyses of employment outcomes are estimated on two different samples, and OLS analyses of wages and hours worked (per week) are estimated on a third sample. The first set of estimations (Table V.7) examines employment outcomes for the entire sample of survey respondents and for the subpopulation of participants not employed at program enrollment. The second set of estimations (Table V.8) examines labor market outcomes that are observable only for workers: wages and hours worked. As such, the analysis is restricted to participants who were employed before program participation, to control for preprogram wages and hours. The focus is on the associations between labor market outcomes and program characteristics that might facilitate improved outcomes.[28]

[28] Not surprisingly, preprogram employment is highly predictive of labor market outcomes. Participant and labor market characteristics that show significant associations with labor market outcomes match typical findings (for example, women have lower employment rates, employment at enrollment is associated with employment after a program) and are not discussed here.

Results suggest that program characteristics and attributes might be associated with educational outcomes when participant and labor market characteristics are controlled for. Consider the associations with program characteristics (Table V.7):[29]

- Participants in the shortest programs had better employment outcomes than those in longer ones. Selection could be particularly problematic in interpreting this association, however. If people expecting extended unemployment enrolled in longer programs, or those more connected to the labor force chose shorter programs, estimated results would produce a positive relationship between program length and employment but it would be driven by employment prior to program entrance and not the program.
- The credential offered and industry in which the training focused were associated with employment outcomes. Participants in programs with licenses and either multiple or no formal credentials had lower levels of employment than those in certificate-granting programs. In addition, participants in information technology programs seemed to be particularly successful in bringing non-employed people into employment. Participants in manufacturing programs seemed to perform worse than average on this metric (although better than average when considering employment for the entire sample). Finally, people in health programs (the omitted category) had significantly higher rates of employment in a related field than those in several other programs.
- Associations for participants not employed when they enrolled in a TBL program were in the same direction as those for the broader population of survey respondents. However, associations seemed to be stronger (that is, larger) for people not employed at program entrance.

[29] Participants in the classroom-based program had significantly better employment outcomes than participants in blended programs, although one cannot disentangle program and instructional model effects.

Table V.7. Participant, Program, and Labor Market Characteristics Associations with Employment Outcomes in Survey Sample

	Employed		Employed Full-Time		Employed in Field of Training	
	All	Not Employed	All	Not Employed	All	Not Employed
Sample Size	**666**	**239**	**666**	**239**	**654**	**236**
Mean of Dependent Variable	0.74	0.56	0.58	0.40	0.45	0.30
Participant Characteristics						
Employed	0.319*	n.a.	0.226*	n.a.	0.193*	n.a.
	(0.046)		(0.077)		(0.051)	
Employed, Unemployment Pending	-0.279	n.a.	-0.181	n.a.	-0.058	n.a.
	(0.150)		(0.125)		(0.157)	
High School or Less Education	0.008	0.068	-0.024	-0.073	-0.010	-0.018
	(0.068)	(0.143)	(0.068)	(0.115)	(0.109)	(0.037)
College or More Education	0.051	0.204*	0.089	0.385*	0.209*	0.059
	(0.052)	(0.088)	(0.060)	(0.114)	(0.076)	(0.036)
Female	-0.128*	-0.225*	-0.210*	-0.291*	-0.121	-0.050
	(0.044)	(0.087)	(0.058)	(0.092)	(0.068)	(0.025)
Gender Missing	-0.277	-0.526*	-0.325*	-0.458*	-0.236	-0.049
	(0.165)	(0.195)	(0.148)	(0.103)	(0.194)	(0.027)
Age 18–24	0.015	-0.028	-0.066	-0.163	-0.079	-0.011
	(0.075)	(0.137)	(0.080)	(0.154)	(0.087)	(0.031)
Age 45 and Older	-0.024	-0.062	-0.054	-0.093	-0.071	-0.005
	(0.045)	(0.094)	(0.042)	(0.091)	(0.054)	(0.024)
Age Missing	0.001	-0.239	0.021	-0.186	0.161	-0.006
	(0.056)	(0.143)	(0.073)	(0.158)	(0.129)	(0.044)
Black	-0.020	-0.090	0.010	0.077	-0.137	-0.030
	(0.090)	(0.217)	(0.101)	(0.212)	(0.143)	(0.045)
Other Race	-0.038	-0.346*	0.041	-0.253	0.050	0.004
	(0.066)	(0.142)	(0.101)	(0.163)	(0.125)	(0.037)
Race Missing	C	C	C	C	C	C
Previously Used TBL	0.016	0.086	0.086	0.025	-0.040	0.012
	(0.041)	(0.080)	(0.060)	(0.080)	(0.055)	(0.031)
Internet Skill: Advanced or Expert	-0.086	-0.086	-0.056	-0.090	-0.133*	-0.019
	(0.044)	(0.061)	(0.061)	(0.110)	(0.059)	(0.025)
Main PC Access for TBL						
Work	0.166*	0.163	0.286*	-0.399*ˇ	0.232*	-0.048*ˇ
	(0.039)	(0.110)	(0.070)	(0.041)	(0.110)	(0.009)
Through Training Program	0.080	0.074	0.077	0.076	0.053	0.088*
	(0.056)	(0.104)	(0.067)	(0.098)	(0.079)	(0.032)
Other	-0.121	-0.344	-0.136	-0.024	0.010	-0.044*
	(0.177)	(0.300)	(0.193)	(0.322)	(0.171)	(0.012)
Chi-Squared Statistic	11.70*	4.72	13.04*	0.62	5.98	14.37*
Program Characteristics						
Program Type						
Classroom-Based	0.205*	0.415*	0.342*	0.654*	0.300*	0.553*
	(0.018)	(0.047)	(0.046)	(0.081)	(0.136)	(0.247)
Online	-0.022	0.015	0.054	-0.063	0.144	0.111
	(0.056)	(0.091)	(0.077)	(0.131)	(0.130)	(0.133)
Chi-Squared Statistic	24.80*	14.78*	23.62*	15.53*	3.95	8.96*
Program Duration						
6 Weeks to 6 Months	-0.161*	-0.357*	-0.173	-0.422*	-0.144	-0.037
	(0.074)	(0.166)	(0.119)	(0.208)	(0.148)	(0.047)
Over 6 Months	-0.172*	-0.463*	-0.205	-0.467*	-0.074	-0.042
	(0.080)	(0.213)	(0.107)	(0.208)	(0.166)	(0.061)
Chi-Squared Statistic	5.64	4.38	3.71	3.67	1.10	0.62
Credentials Offered						
None	0.205*	0.452*ˆ	0.394*	0.700*ˆ	0.028	0.402
	(0.021)	(0.020)	(0.044)	(0.037)	(0.253)	(0.284)
License	0.196*	0.396*	0.220*	0.371*	0.237	0.354
	(0.028)	(0.060)	(0.081)	(0.186)	(0.161)	(0.235)
Degree	0.043	0.040	0.151	0.074	0.076	0.114
	(0.074)	(0.243)	(0.085)	(0.231)	(0.175)	(0.169)
Multiple Offered	0.150*	0.395*	0.293*	0.663*	0.036	0.990*
	(0.056)	(0.040)	(0.078)	(0.080)	(0.139)	(0.004)
Chi-Squared Statistic	43.85*	36.20*	32.11*	13.89*	2.25	200.73*

	Employed		Employed Full-Time		Employed in Field of Training	
	All	Not Employed	All	Not Employed	All	Not Employed
Instructional Timing						
Had Scheduled Sessions with Instructor	0.051 (0.047)	0.120 (0.156)	0.024 (0.070)	0.196 (0.143)	0.055 (0.069)	-0.008 (0.028)
Worked on Program on Own Time	-0.014 (0.038)	0.134* (0.067)	-0.014 (0.039)	0.247* (0.083)	-0.012 (0.089)	0.035 (0.019)
Chi-Squared Statistic	1.52	4.11	0.13	10.79*	0.90	2.73
Program Industry						
Construction	0.080 (0.052)	0.014 (0.187)	0.158 (0.106)	-0.116 (0.252)	-0.197 (0.117)	-0.012 (0.039)
Energy/Information Technology	0.108 (0.065)	0.346* (0.116)	0.232* (0.079)	0.370* (0.139)	-0.342* (0.123)	-0.012 (0.053)
Manufacturing	0.060 (0.059)	-0.131 (0.126)	0.161* (0.075)	-0.285* (0.105)	-0.221* (0.110)	-0.308*^ (0.032)
Other	0.010 (0.061)	0.252* (0.082)	0.007 (0.069)	-0.002 (0.176)	-0.267* (0.076)	0.014 (0.045)
Chi-Squared Statistic	3.06	16.52*	9.90*	9.05	15.54*	0.32
Local Labor Market Characteristics						
Unemployment Rate	0.016 (0.017)	-0.032 (0.030)	0.006 (0.019)	-0.058* (0.029)	0.015 (0.030)	0.011 (0.010)
Urban Cluster (versus Urban Area)	0.097 (0.073)	-0.307* (0.133)	0.135 (0.073)	-0.308* (0.076)	0.214 (0.165)	-0.103*ˇ (0.016)

Sources: Participant survey.

Notes: All numbers reflect marginal effects from probit estimations unless stated otherwise. Omitted categories are AA, AS, or Some College for education, personal computer for PC access, blended program type, duration of 0 to 6 weeks, and health care for industry. Some programs are still in progress. See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

* Estimate significantly different from zero at the 0.05 level, two-tailed test.

C = Dropped due to collinearity; ˇ = perfectly predictive of outcome = 0; ^ = perfectly predictive of outcome = 1.

Results that focus on the labor market outcomes of wages and hours worked are restricted to participants who were employed before enrolling in their TBL program and include controls for hours of work and hourly wages before enrollment. Only the set of program duration indicators and the set of credential indicators jointly predict wage changes (Table V.8). Similarly, only industry of training and credentials offered in the training program jointly predict changes in weekly hours of work. Only a small number of coefficients are individually significant potentially because of the small sample size and relatively large number of variables of interest. Participants in programs that did not offer a credential had increased wages and hours of work compared to those in certificate programs, perhaps indicating that certificates are not good signals of worker quality. Participants in degree programs had higher wages than those in certificate programs, further suggesting the relative value of certificates. Finally, participants in programs that focused on energy/information technology or manufacturing had increased hours of work. These industries may require longer weekly hours than the baseline category (health care). Alternatively, individuals completing training programs may be able to use their training to request more hours on the job.

Table V.8. Participant, Program, and Labor Market Characteristics Associations with Wage and Hours for Survey Respondent Employed at Program Entry

	Hourly Wage (Log)	Weekly Hours Worked
Sample Size	**330**	**340**
Mean of Dependent Variable	22.49	38.31
Participant Characteristics (Before Participation)		
Hourly Wage (log)	0.605* (0.103)	-0.076 (1.038)
Hours Worked per Week	-0.000 (0.002)	0.486* (0.105)
Employed, Unemployment Pending	0.005 (0.091)	1.325 (2.237)
High School or Less Education	0.009 (0.098)	-2.145 (2.253)
College or More Education	0.073 (0.063)	-1.132 (1.678)
Female	0.059 (0.043)	-0.835 (1.193)
Gender Missing	0.129 (0.115)	-1.176 (2.334)
Age 18–24	0.042 (0.107)	3.778 (2.711)
Age 45 and Older	0.046 (0.070)	-0.673 (2.276)
Age Missing	0.041 (0.048)	-0.202 (1.645)
Black	0.007 (0.066)	-1.388 (2.332)
Other Race	0.061 (0.064)	-1.015 (2.167)
Race Missing	C	C
Previously Used TBL	0.083 (0.070)	2.077 (1.112)
Internet Skill: Advanced or Expert	0.074 (0.045)	-0.424 (0.944)
Main PC Access for TBL		
Work	-0.030 (0.043)	0.174 (1.350)
Through Training Program	-0.156 (0.089)	-0.023 (1.362)
Other	-0.362* (0.155)	-2.267 (2.646)
F-Test for Distribution	2.36	0.28
Program Characteristics		
Program Type		
Classroom-Based	-0.112 (0.115)	-1.175 (2.832)
Online	0.071 (0.057)	2.612 (2.306)
F- Test	1.77	0.86
Program Duration		
6 Weeks to 6 Months	-0.020 (0.098)	-1.478 (3.017)
Over 6 Months	0.126 (0.069)	-2.900 (2.366)
F-Test for Distribution	4.02*	0.91
Credentials Offered		
None	0.336* (0.116)	7.269* (2.195)
License	0.187 (0.111)	2.469 (3.289)
Degree	0.174* (0.073)	3.129 (1.776)
Multiple Offered	0.037 (0.065)	0.939 (2.109)
F- Test for Distribution	3.49*	3.58*

	Hourly Wage (Log)	Weekly Hours Worked
Instructional Timing		
Had Scheduled Sessions with Instructor	-0.010 (0.033)	-2.676 (1.741)
Worked on Program on Own Time	-0.069 (0.104)	-1.167 (1.771)
F- Test for Distribution	0.35	1.27
Program Industry		
Construction	-0.031 (0.119)	-2.480 (3.015)
Energy/Information Technology	0.108 (0.057)	5.396* (1.242)
Manufacturing	0.172 (0.108)	7.746* (2.868)
Other	0.040 (0.087)	2.279 (2.343)
F- Test for Distribution	1.39	6.89*
Local Labor Market Characteristics		
Unemployment Rate	-0.017 (0.014)	0.114 (0.502)
Urban Cluster (versus Urban Area)	-0.046 (0.047)	2.252 (1.842)

Sources: Participant survey.

Notes: All numbers reflect coefficients from OLS estimations. Omitted categories are AA, AS, or Some College for education, personal computer (PC) for PC access, blended program type, duration of 0 to 6 weeks, and health care for industry. Some programs are still in progress. See the list of acronyms at the beginning of the report for definitions of all acronyms used. See Appendix A for variable definitions.

* Estimate significantly different from zero at the 0.05 level, two-tailed test; ˅ = perfectly predictive of outcome = 0; ^ = perfectly predictive of outcome = 1.

C. Summary

The TBL initiative sought to increase skills in high-growth, high-demand occupations that need workers with specific, often unavailable, skills by integrating technologies into programs leading to a recognized credential. Both administrative and survey data suggest that over half the participants in TBL programs had positive education outcomes. More than two-thirds completed their TBL program, and over half earned a credential from their program. Holding other observable variables constant, participants in online programs were more likely to complete the program, and participants in programs associated with degrees and licenses, or not tied to a professionally recognized credential, more often completed the program than did participants in programs offering certificates. Both administrative and survey data also suggest that labor market outcomes improved for participants after they left their TBL program. Programs reported that 79 percent of participants were employed after program participation (an increase from 56 percent before enrollment); participants reported their employment rate increased from 68 to 73 percent. Holding all else constant, our results suggest that classroom-based programs and programs between six weeks and six months long were most likely to lead non-employed individuals into work. Average wages for those who were working increased from an initial pay rate of $19.59 per hour before program participation to $21.60 per hour after participation. Regression analysis reveals that wage gains are higher for individuals in degree programs and programs offering no formal credential.

VI. DISCUSSION

TBL programs and the participants they served varied across several dimensions, as the administrative data and participant survey data collected for this study indicate. Still, data provide a glimpse into the experience of participants in programs in the initiative and highlight strengths and challenges the TBL programs faced. This chapter summarizes results of the study and presents program strengths, weaknesses, the lessons learned that can be gleaned from the results, and the next steps that might be taken to assess the potential for TBL programs to build workforce skills.

A. Summary

Analysis of administrative and survey data provides insights into the TBL programs, albeit one from the participant's vantage point. It suggests that grantees offered TBL programs that (1) served a diverse set of participants, (2) built learning communities to support them, (3) had high levels of program satisfaction, and (4) produced positive education and employment outcomes.

Served a diverse set of participants. Programs reported that a slight majority of participants were women, between 25 and 44 years old, white, and employed. This description fits the general profile of participants in online programs. Participants were also relatively well educated (only about 1.6 percent did not have a high school diploma or equivalent) and low income (about 40 percent). Relatively few were English learners, veterans, or people with a disability. Participant characteristics varied with program characteristics, perhaps as individuals sorted into the programs that best fit their needs. Online-only programs tended to enroll more older participants who were employed, more highly educated, and seeking to improve their capacity within their current job than other types of programs. Early- or mid-career individuals and those with prior experience with TBL and advanced internet skills tended to enroll in longer programs. TBL programs that offered degrees tended to attract people who were working full-time and might be seeking the flexibility and support of a more established program to manage their work-life balance.

Built learning communities to support participants. TBL programs seemed to create strong learning communities among students and instructors and provide services that could support participants' general workplace skills. TBL initiative programs offered both academic and social support to participants, providing environments that could support strong learning communities. Participants reported interacting with other members of their learning community, often daily or weekly, both in person and remotely. Programs that blended online and in-person instruction were more successful at maintaining contact with students than were exclusively online programs. In addition, the more time students spent in their program, the more likely they were to interact more frequently with other students or instructors.

Generated high levels of program satisfaction. Survey respondents reported overwhelmingly high rates of satisfaction with their program, its instruction, and its components. Nearly three-quarters of survey respondents said they were satisfied with their program, and only 5 percent said they were very dissatisfied with it. At least 90 percent of participants would recommend their program to others who might be looking for a similar learning opportunity; said their TBL instructor was satisfactory; responded that their program was a convenient way to participate in training; and stated that it provided them with flexibility with their other life responsibilities. Furthermore, more than 80 percent felt like they were part of a learning community; the interaction with students was satisfactory; and the pace of learning was satisfactory. Participants seemed to appreciate the benefits of TBL learning, with most saying that online or TBL was preferable to traditional classroom training. Almost all felt they learned something new in their TBL program or

that that their program helped them gain or enhance skills. More than 90 percent of TBL participants would consider taking another TBL course in the future.

Produced positive education and employment outcomes. Programs reported that more than two-thirds of TBL participants completed their program, even though participants faced conflicting demands on their time and personal and financial problems that made it difficult to complete their training. In addition, programs reported that most participants earned an industry-recognized credential from their program at similarly high rates.

Even with the challenging economic climate in which TBL grantees were operating, participants successfully found and kept jobs. Both the administrative data set of participants and the survey data showed statistically significant increases in employment between pre- and postenrollment. In the administrative database, employment increased from 56 to 79 percent of participants after training. Among survey respondents, employment increased from 65 to 73 percent after training. Most TBL participants not only had jobs after program participation, but also had jobs that related to the training in which they participated. The share of participants in a training-related job may be even higher when factoring in the possibility that some jobs may not be in the same industry but still required participants to apply skills learned in their TBL program. In addition, data suggest that the average wages for participants who were working increased after the training. The average wage of employed survey respondents increased from a pay rate of $19.59 per hour to $21.60 per hour.

B. Program Strengths

Analysis of the information from the participant survey identified several advantages to using TBL to build workforce skills. Most prominently, TBL provided flexibility that allowed participants to combine building workplace skills with other aspects of their lives. Flexibility appears to be the most valuable aspect of TBL and was a key motivator for participants in choosing a technology-based format rather than a traditional classroom one. More than two-thirds of survey respondents cited flexibility with life responsibilities as a reason for choosing TBL over traditional instruction, and nearly one-third reported a preference for self-paced instruction. Even more than bridging a distance gap, students valued the convenience of being able to access at least some instruction online on their own schedule, either regularly or as a backup if they had to miss a scheduled class. People who enrolled in TBL because of the flexibility it afforded or a preference for self-paced instruction were more satisfied.

Providing adequate support for the technology is very important to participants in a technology-based program, where the technology may be the main means for accessing instructional material and assignments. Most survey respondents reported having adequate computer skills and access to computers for the program. Respondents to the survey reported that programs were able to make computers available to students who needed them, and nearly one-third of survey respondents reported using a computer provided by their TBL program. Respondents also reported that they did not find the use of technology in their programs particularly onerous or cumbersome. Nearly all survey respondents said the technology was easy to use, they had sufficient access to computers to participate fully in their course, existing computer skills were adequate for participating in the program, and they received adequate support for technical problems from their program. Furthermore, more than three-fourths did not feel the technology-based portion of the program took too much time.

Programs appeared to balance the individualization of courses with the desire of participants to be part of a larger learning community. Interaction with instructors and other students affects students' learning and motivation. TBL programs overall were successful in facilitating interaction with instructors and with other students to keep participants engaged and linked to the community, which may have facilitated program completion rates and other improvements. Furthermore, analysis of the data from survey respondents suggests that TBL programs looked at participants holistically to identify their employment needs. Because nearly one-third of TBL students reported looking for training that will launch them into a new career or prepare them to re-enter the workforce, it stands to reason that they would benefit from professional guidance on how best to navigate an unfamiliar job market or overcome personal barriers to advancing their career. Many participants reported being assessed for their career interests as well as computer skills, and others reported receiving help with writing resumes, preparing for job interviews, and finding work. Programs that offered both online and in-person components were more likely to offer these types of holistic services. Participants also reported being more satisfied with their programs if they received additional career-related services (such as career counseling, job placement assistance, or skills assessment).

C. Program Challenges

Analysis of the information from programs (administrative data) and the participant survey identified several challenges to using TBL to build workforce skills. Arguably, most noticeable was the challenge of recruiting atypical students into the programs. Grantees were asked to target students not typically targeted by technology-based programs. Even though the initiative overall did attract more men than the average online program, the average program fit the typical gender, race, and age profiles for TBL. Nor did most programs bridge gender gaps in their related industry. Women dominated the nursing and health care programs, and men dominated the construction, manufacturing, and energy programs.

Programs that the TBL initiative funded also did not break a "glass ceiling" for the unemployed and underemployed. Although programs targeted unemployed and underemployed people, the admissions process in many programs may have prevented lower-skilled workers from accessing more higher-skilled training programs. Fewer than 2 percent of program participants did not have a high school education or a GED credential, although about 40 percent had only a high school education. Participants with only a high school education were more concentrated in shorter programs that did not offer a credential or offered a certificate, and these programs are less likely to be life- or career-changing opportunities for these individuals.

Most participants reported weekly contact with their instructor and fellow students, but programs might be able to improve the level of interaction between participants and instructors. Between 12 and 15 percent of participants were dissatisfied with the level of interaction they had with their instructors and with other students. About 16 percent of survey respondents reported never meeting their instructor in person, and 11 percent reported never having remote contact with the instructor. Respondents reported similar rates of noncontact with students, in person or remotely. Participants in online programs and shorter programs reported lower levels of contacts—in person and remote—with instructors and other students than participants in other programs. Participants in programs in which they saw their instructor less than monthly expressed lower levels of program satisfaction than participants in other programs.

Respondents to the participant survey implied that their TBL program might have limited ability to boost participants' earning potential in the long term. Only about 40 percent of survey respondents felt the knowledge they acquired in their TBL program would help them advance in their career. Although most respondents reported learning something new from their program, fewer respondents expected it to have a lasting influence on their career. Because many people enrolled in their TBL program to improve their potential, there could be a gap between what TBL programs offered as career-enhancing skills and what individuals actually need to advance in their field. Programs may need to evaluate their goals and whether they are offering content that has enough depth or relevance to add value for people in the workforce.

One way programs might identify areas in which they might not be building workplace skills needed in the labor market is to examine the employment outcomes of students in their programs. Yet, little evidence exists that programs are doing this. For example, when Mathematica requested information from grantees about their participants' outcomes, relatively few could comply. Less than 35 percent of grantees could provide participant information on seven key variables: (1) completed training program; (2) attained degree, credential, or certificate; (3) entered unsubsidized employment; (4) entered training-related employment; (5) gender; (6) race; and (7) education at enrollment. Only two grantees provided all data for 95 percent or more of program participants, and these grantees enrolled only 124 participants (or 0.8 percent of all participants). Eight grantees did not provide complete information on any participant, and these grantees enrolled 2,586 participants (or 17.3 percent of all participants).

D. Looking to the Future

This evaluation of programs that were part of the TBL initiative highlights their potential to expand access to training and increase the number of qualified workers available to employers. Unfortunately, the limitations of this study preclude it from drawing conclusive evidence about the potential of TBL. The lack of a control group for whom outcomes can be compared means that differential selection into programs, for example, could mitigate the relationship between TBL program characteristics and outcomes suggested by this evaluation. Furthermore, the analysis of program satisfaction and outcomes was based on a relatively small number of program participants and relatively few grantees, which makes it difficult to determine the effectiveness of interrelated program characteristics. For example, there is only one classroom-based program in these data, which makes it impossible to determine whether all classroom-based programs—or this one particular program—are effective. More rigorous research is needed to determine whether the value of TBL programs suggested by this study can be attributed to the TBL instructional pedagogy. Given the potential of TBL to expand the capacity of workforce development programs, its potential should be explored.

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APPENDIX A

DATA COLLECTION

This appendix describes processes used to collect the primary data for this study. Mathematica collected information from two sources to gain insights into the TBL participant characteristics, TBL participants' program satisfaction, and outcomes of TBL program participants:

1. Participant-level **administrative data** on characteristics and outcomes for all people who participated in a TBL program under the initiative from each grantee, and
2. Information from a sample of TBL **survey participants** on outcomes and program satisfaction through a survey

Data were collected in two stages (Table A.1).

Table A.1. Timing of Data Collection

	Administrative Data	Survey Data
Stage I	August 15 to October 17, 2011	October 31, 2011, to February 13, 2012
Stage II	August 6 and October 26, 2012	November 7, 2012, to January 31, 2013

These data were analyzed within the context of information provided by the previous evaluations of the TBL programs (Dunham et al. 2011b) to provide a more complete picture of the programs and to construct program variables. Information from the two sources (data for this study and site visits) might differ, for two reasons. First, information from the site visits was obtained in August 2009 and July 2010 (see Appendix D), or about two to three years before the start of the participant data collected for this evaluation. Second, because grants were awarded in 2009, information collected at the site visits describes programs at the beginning of the grants and, for some grantees, might reflect plans more than implementation. Participants in the program at a later time might experience a different type of program. Still, information from site visits provides important context about program operations and intended structure that is not available in the administrative and survey data.

The two sections in this appendix describe the processes used to collect the administrative and survey data and the degree to which data elements were not available for analysis.

A. Administrative Data

Grantees provided Mathematica with administrative data in fall 2011 and fall 2012 for 14,968 TBL program participants across the 20 grantees and 21 programs. In fall 2012, grantees provided their ETA regional field project officers (FPOs) with a report of enrollment that totaled 15,105 participants, or 0.9 percent more participants than reported in the data files sent to Mathematica, which leaves some uncertainty as to the exact number enrolled. Table A.2 shows the differences between these data for each grantee. The comparison suggests that the differences do not seem to vary systematically, perhaps because different people provided the data, and some (the information collected in 2011) was collected at a different time.

Administrative data provided to Mathematica is used for analysis in this report because they contain information on participant characteristics and outcomes not available in the participant counts provided to the FPOs. Those counts are only used in general descriptions of programs (Table I.1 in Chapter I and Table D.1 in Appendix D) to make direct comparisons between "official" counts to ETA in projected and actual enrollments (as of fall 2012).

Table A.2. Number of Participants Served, as Reported by Grantees and FPOs

Grantee	Participants in Administrative Data	Participants from FPO Reports	Percentage Difference
A-DA	104	102	2.0
CSN	321	474	-32.3
Dillard	238	272	-12.5
GCSC	108	150	-28.0
GTC	223	100	123.0
HCC	637	634	0.5
IDCEO	540	934	-42.2
MCC	183	173	5.8
NCTC	108	132	-18.2
NOVA	20	113	-82.3
OC WIB	131	134	-2.2
OWATC	326	386	-15.5
Reno CSA	56	56	0.0
RF SUNY	884	668	32.3
Temple CSPCD	144	174	-17.2
TGC	9,482	9,012	5.2
UCD	173	162	6.8
WGU	222	222	0.0
WTCC	888	971	-8.5
WVUP	180	236	-23.7
Total	**14,968**	**15,105**	**-0.9**

Source: Administrative data from TBL grantees and participant counts to FPOs.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. The percentage difference is computed as: (# in administrative data - # from FPO) * 100.

Administrative data were collected in two stages, in fall 2011 and fall 2012. The data requested included four types of participant-level information from grantees:

1. **Participant contact information,** including mailing and email addresses
2. **Program participation information,** including entry and exit dates for the TBL program
3. **Participant characteristics,** including date of birth, gender, and education status
4. **Participant outcomes,** including program completion and postprogram efforts to find employment

Data collected in the first stage was coordinated by ETA, with help from Mathematica. ETA initiated data collection on August 15, 2011, by sending all grantees an email that provided details of the evaluation and requested information for all participants in the TBL programs. A second notification was sent on September 2, 2011, and a third on September 7, 2011. The third notification included a request that grantees return the contact and program information by September 30, 2011, and the remaining information by January 30, 2012. During the first stage, 19 grantees provided contact and program participation information, 10 provided participant characteristic information, and 8 provided participant outcome information.

Unforeseen circumstances stopped data collection on October 17, 2011, and prevented it from being resumed until August 2012. At that time, Mathematica asked grantees to provide or update administrative data collected during stage I. Grantees were asked to upload data to a secure, password-protected data storage location through a file transfer website maintained by Mathematica. The website was available between August 6 and October 26, 2012, which allowed Mathematica enough time to verify that the uploaded data were accurate.

Each type of data collected serves a different purpose for the evaluation:

- Participant contact information was used to construct the surveying sampling frame and to contact participants selected for the survey (discussed in Section B).[a]
- Program participation information was used to construct the sampling frame for surveying (as discussed in Section B) and to develop measures of participation. This information was augmented by the instructional model, program duration, and credential offered in the program in which the participant was enrolled. This information was constructed from visits to the sites (Appendix D).
- Participant characteristics and outcomes information was used to develop key analytic variables in descriptive and multivariate analyses.

Table A.3 contains a definition of the variables constructed from the administrative data or derived from sources external to this study.[b] If information was not available to construct the variable, its value was set to missing (unless otherwise specified).

Table A.3. Variables Constructed from Administrative Data and Outside Sources

Variable	Definition
Program Participation Information	
TBL grantee	Series of 20 indicator variables in which 1 = participation in a particular grantee's TBL program and 0 = otherwise.
Date started TBL program	Date individual started TBL program. Assumed to be equivalent to date started training program if no valid start date provided.
Exited TBL program	Indicator variable in which 1 = exited TBL program and 0 = did not exit program.
Date exited program	Date individual exited TBL program. Assumed to be date completed training program, if no valid exit date provided.
TBL training program	Name of training program or course individual was enrolled in.
Completed training	Indicator variable in which 1 = completed TBL training program and 0 = did not complete program.
Date started training program	Date started training program. Assumed to be equivalent to date started TBL program if no valid start date provided.
Date completed training program	Date completed training program. Assumed to be equivalent to date exited program if no valid complete date provided, and the individual completed the training program.
Program Model (Dunham et al. 2011b)	
Online only	An indicator variable in which 1 = program used online only instruction and 0 = program used any classroom-based instruction.
Classroom-based	An indicator variable in which 1 = program used classroom-based instruction only and 0 = program used any online instruction.
Blended	An indicator in which 1 = program used both classroom-based and online instruction and 0 = program used only online or only classroom-based instruction.
Program Duration (Dunham et al. 2011b)	
0 to 6 weeks	An indicator variable in which 1 = program is intended to last less than 6 weeks and 0 = program is intended to last 6 weeks or longer.
6 weeks to 6 months	An indicator variable in which 1 = program is intended to last 6 weeks to 6 months and 0 = program is intended to last longer than 6 months or less than 6 weeks.
6 months to 2 years	An indicator variable in which 1 = program is intended to last more than 6 months and 0 = program is intended to last 6 months or less.
Program Industry (Dunham et al. 2011b)	
Health care	An indicator variable in which 1 = training program focuses on skills for the health care industry and 0 =

[a] Mathematica replaced all personally identifiable information in the analytic and public-use data files with a unique identifier to ensure anonymity to all but members of the study team who were cleared to access such information.

[b] Past work performed by Dunham et al. (2011b) categorized TBL programs in several different ways. These categorizations are used in this study. Data on local labor markets were also collected from the Bureau of Labor Statistics and U.S. Census Bureau sources.

Variable	Definition
	otherwise.
Construction	An indicator variable in which 1 = training program focuses on skills for the construction industry and 0 = otherwise.
IT/energy management	An indicator variable in which 1 = training program focuses on skills for the IT or energy management industries and 0 = otherwise.
Manufacturing	An indicator variable in which 1 = training program focuses on skills for manufacturing and 0 = otherwise.
Transportation	An indicator variable in which 1 = training program focuses on skills for the transportation industry and 0 = otherwise.
Other	An indicator variable in which 1 = training program focuses on skills for industries not otherwise mentioned and 0 = otherwise.
Credential Offered (Dunham et al. 2011b)	
Certificate	An indicator variable in which 1 = program offered participants the chance to earn a certificate and 0 = program did not offer a certificate.
License	An indicator variable in which 1 = program offered participants the chance to earn a license and 0 = program did not offer a license.
Degree	An indicator variable in which 1 = program offered participants the chance to earn a degree and 0 = program did not offer a degree.
Participant Characteristics at Enrollment	
Age at Enrollment	
Age	Age is the difference in days between the birth date and the date the individual entered training, divided by 365.25. If age is calculated as less than 18, it is assigned a value of missing. 1 = in age range and 0 = in another range. Age ranges: 18 to 24 years 25 to 44 years 45 years and older
Disability status	An indicator variable in which 1 = a person being disabled and 0 = otherwise person does not report a disability.
Education Status at Enrollment	
Not completed high school/GED	An indicator variable in which 1 = did not receive a high school diploma or GED credential and 0 = other education levels.
High school/GED	An indicator variable in which 1 = completed 12th grade and attained a high school diploma or other high school equivalency. Also includes individuals with a disability who received a certificate of attendance/completion and 0 = other education levels.
Associate's degree	An indicator variable in which 1 = received an associate's degree and 0 = other education levels.
Some college	An indicator variable in which 1 = completed some college course but did not receive a bachelor's degree and 0 = other education levels.
Bachelor's degree	An indicator variable in which 1 = received a bachelor's degree and 0 = other education levels.
Graduate degree	An indicator variable in which 1 = received a graduate degree and 0 = other education levels.
Employment Status at Enrollment	
Not employed	An indicator variable in which 1 = not employed and 0 = employed.
Employed	An indicator variable in which 1 = employed, irrespective of hours of work and 0 = not employed.
Gender	
Male	An indicator variable in which 1 = male and 0 = female reported.
Female	An indicator variable in which 1 = female and 0 = male reported.
Limited English proficient	An indicator variable in which 1 = limited English proficiency at time of enrollment and 0 = otherwise.
Low income/public assistance recipient	An indicator variable in which 1 = low income or a public assistance recipient at time of enrollment and 0 = not low income or public assistance recipient. Low income and public assistance were defined by the grantee.
Veteran status	An indicator variable in which 1 = a person being a veteran and 0 = otherwise.
Race/Ethnicity	
Hispanic	An indicator variable in which 1 = Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture in origin, regardless of race and 0 = all other races.
Native American (non-Hispanic)	An indicator variable in which 1 = origins in any of the original peoples of North America and South America (including Central America) and who maintains cultural identification through tribal affiliation or community recognition and 0 = all other races.
Asian/Pacific Islander (non-Hispanic)	An indicator variable in which 1 = origins in any of the original people of the Far East, Southeast Asia, or the Indian Subcontinent, or a person having origins in any of the original people of Hawaii, Guam, Samoa, or other Pacific Islands and 0 = all other races.
Black or African American (non-Hispanic)	An indicator variable in which 1 = origins in any of the black racial groups of Africa and 0 = all other races.
White (non-Hispanic)	An indicator variable in which 1 = origins in any of the original peoples of Europe, the Middle East, or North Africa and 0 = all other races.
Other	An indicator variable in which 1 = more than one of the above non-Hispanic race categories, or another race category and 0 = all other races. Race is classified as "Other" and not missing if any information

Variable	Definition
	on race is provided but that information does not allow a respondent to be placed in one of the above categories.
Local Area Variables	
Unemployment rate	The nonseasonally adjusted unemployment rate for the metropolitan statistical area served by a program in November 2012. Data from BLS, available at: http://www.bls.gov/lau/ssamatab1.txt. Rates are expressed in percentage points.
Urban cluster or urban area	An indicator variable in which 1 = program serves metropolitan statistical area designated by Census as an Urban Cluster (containing 10,000 to 49,999 people) and 0 = program serves metropolitan statistical area designated by Census as an Urban Area (50,000 or more people). This data set contains no areas with a population of less than 10,000.
Participant Outcomes	
Degree, credential, or certificate attained	An indicator variable in which 1 = received a degree, credential, or certificate from the training program and 0 = otherwise.
Name of degree, credential, or certificate attained	Name of credential or credentials earned through TBL program.
Date degree, credential, or certificate attained	Date degree, credential, or certificate attained from program. Assumed to be equivalent to date exit from program if degree, credential, or certificate attained.
Entered unsubsidized employment	Indicator variable in which 1 = entered unsubsidized employment or continued preprogram unsubsidized employment following completion of the program and 0 = otherwise.
Entered training-related employment	Indicator variable in which 1 = entered training-related employment or continued preprogram training-related employment following exit from the program and 0 = otherwise. Coded as 0 if individual is not employed following program exit.
Date entered training-related employment	Date entered training-related employment following program exit.
Industry Sector of Employment	
Industry	Series of indicator variables, one for each of the (NAICS 2-digit) industry codes of employment following completion of TBL program. All indicators are coded as missing if respondent provided no information on industry. 1 = employed in a particular industry and 0 = employed in another industry. Industries: 23 = construction 33 = manufacturing 42 = wholesale trade 44 = retail trade 48 = transportation 53 = real estate 54 = professional services 55 = management 56 = administration and support services 62 = health care 71 = arts and entertainment 72 = accommodation and food services 92 = public administration 99 = other Categories 42, 44, 53, 55, 56, 71, 72, 92, and 99 are sometimes combined to reduce dimensionality.

Although all grantees and programs provided administrative data, they rarely provided complete information for all program participants. Table A.4 shows the percentage of participants in each program and the participants in the analytic sample, defined as those with information on seven key variables: (1) completed training program; (2) attained degree, credential, or certificate; (3) entered unsubsidized employment; (4) entered training-related employment; (5) gender; (6) race; and (7) education at enrollment. As the table shows, grantees provided information on all seven variables for only 33.5 percent of program participants. Only two grantees provided all data for 95 percent or more of program participants, and these grantees enrolled only 124 participants, or 0.8 percent of all participants. Eight grantees did not provide complete information on any participant, and these grantees enrolled 2,586 grantees, or 17.3 percent of all participants.

Table A.4. Percentage of Participants with Administrative Information, by Grantee

	Total TBL Population	Total Analytic Sample	Percentage Complete Data
A-DA	104	101	97.1
CSN	321	0	0.0
Dillard	238	124	52.1
GCSC	108	56	51.9
GTC	223	47	21.1
HCC	637	6	0.9
IDCEO	540	0	0.0
MCC	183	0	0.0
NCTC	108	0	0.0
NOVA	20	19	95.0
OC WIB	131	12	9.2
OWATC	326	134	41.1
Reno CSA	56	27	48.2
RF SUNY	884	207	23.4
Temple CSPCD	144	0	0.0
TGC	9,482	4,210	44.4
UCD	173	66	38.2
WGU	222	0	0.0
WTCC	888	0	0.0
WVUP	180	0	0.0
Total	**14,968**	**5,009**	**33.5**

Source: Administrative data from TBL grantees.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. The analytic sample is limited to participants who had information to construct seven variables: (1) completed training program; (2) attained degree, credential, or certificate; (3) entered unsubsidized employment; (4) entered training-related employment; (5) gender; (6) race; and (7) education status at enrollment.

The level of missing data is even higher and the variation among grantees is greater when other data elements are examined. Table A.5 shows the percentage of data elements provided by each grantee, the percentage of participants for whom the information was provided, and the percentage of grantees that provided each data element. As the table shows, only five grantees provided all data elements requested, although 12 provided at least 80 percent. Only one grantee (IDCEO) provided fewer than half of the data elements requested.

Information in Table A.5 also can be used to assess missing data elements. Although information on participant contact and program participation had relatively low rates of missing data, participant outcome information had relatively high rates. For example, information on the date entered unsubsidized employment and date entered training-related employment was available for only about two percent of program participants. As a result, only 1.2 percent of participants had information for all data elements requested.

Table A.5. Completeness of Administrative Data Elements

	Percentage of Participants with Elements	Percentage of Grantees with Elements	A-DA	CSN	Dillard	GCSC	GTC	HCC	IDCEO	MCC	NCTC	NOVA	OC WIB	OWATC	Reno CSA	RF SUNY	Temple CSPCD	TGC	UCD	WGU	WTCC	WVU
Total Percentage of Elements Reported	**1.2[a]**	**25.0[b]**	**100**	**54**	**81**	**100**	**96**	**73**	**38**	**88**	**81**	**100**	**100**	**92**	**100**	**65**	**69**	**69**	**81**	**69**	**50**	**81**
Participant Contact Information																						
Name, address, telephone	97.2	100.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Email address	95.5	90.0	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Program Participation Information																						
Date started TBL program	84.6	95.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
Exited TBL program	27.6	85.0	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X		X	X
Date exited TBL program	73.0	100.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Name of training program(s)	72.0	95.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Completed training program(s)	81.8	95.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Date started training program(s)	84.6	95.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
Date completed training program(s)	76.5	95.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Participant Characteristics at Enrollment																						
Age (date of birth)	65.7	90.0	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X
Disability status	15.5	70.0	X		X	X	X	X		X	X	X	X	X	X		X			X		X
Education status	72.0	75.0	X		X	X	X	X			X	X	X	X	X	X		X	X	X		X
Employment status	83.8	70.0	X		X	X	X	X				X	X	X	X			X	X	X	X	X
Gender	69.2	95.0	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Limited English proficient	72.7	60.0	X		X	X	X			X	X	X	X		X		X	X	X			
Low-income/public assistance recipient	9.9	50.0	X		X	X			X	X	X	X	X		X		X					
Race/ethnicity	66.1	90.0	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Veteran status	16.9	70.0	X		X	X	X	X		X		X	X	X	X		X		X	X		X
Participant Outcomes																						
Degree, credential, or certificate attained	80.4	95.0	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Name of degree, credential, or certificate attained	14.1	85.0	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X		X
Date degree, credential, or certificate attained	71.1	95.0	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Entered unsubsidized employment	76.8	65.0	X			X	X			X	X	X	X	X	X		X	X	X			X
Date entered unsubsidized employment	2.1	45.0	X			X	X			X	X	X	X	X	X							
Entered training-related employment	75.7	60.0	X		X	X	X			X		X	X	X	X			X	X			X
Date entered training-related employment	1.8	40.0	X			X	X			X		X	X	X	X							
Industry sector of employment	73.7	60.0	X		X	X	X			X		X	X	X	X	X		X	X			

Source: Administrative data from TBL grantees.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. An "X" in a cell designates that the grantee provided information for that element for at least one participant. It does not mean that information was provided for all participants in that grantee's program.

[a] Percentage of participants with complete data, excluding elements that are only provided when another element has a positive value. For example, "date entered unsubsidized employment" is only provided when a positive value for "entered unsubsidized employment" exists.

[b] Percentage of grantees that provided information on all elements.

B. Survey Data

Before Mathematica obtained a contract to evaluate TBL programs, Social Policy Research Associates (SPR) developed an in-depth survey to assess participants' satisfaction with their TBL programs. The survey was designed to collect information on participants' demographic and educational backgrounds, aspects of their pre- and postprogram employment, and detailed information on program activities and perceptions of TBL. SPR helped prepare the paperwork for the Office of Management and Budget (OMB) approval process. Shortly after OMB approval was received, Mathematica was awarded the contract to field the survey and produce the report.

Survey data serve a different purpose from administrative data in addressing the research questions. Survey respondents represent a smaller portion of TBL participants, but the information allows for a more in-depth analysis of the motivations for participating in the TBL program and the aspects of the program that participants valued most. The survey contained five types of information on the participants:

1. **Preprogram knowledge of technology,** including reasons for enrolling in the TBL program and experience using technology
2. **Preprogram employment and education,** including the type, and highest level, of education when participants started the program
3. **Program activities,** including the services received (for example, financial assistance, career counseling, or job placement assistance) during the program
4. **Program satisfaction,** including satisfaction with instruction, interaction with instructors and students, and other facets of the program
5. **Postprogram outcomes,** including labor market activities after leaving the program

1. Drawing the Sample

Because participant contact information from the administrative data was required to field the survey, the sampling frame was developed and the survey fielded in two stages, each of which occurred shortly after administrative data collection in fall 2011 and fall 2012 (Table A.1). In the first stage, the sampling frame was constructed for the 19 (of 20) grantees and 19 (of 21) programs that provided contact information when the administrative data were requested in 2011(A-DA and CSN's Nurse Refresher program did not provide data). Mathematica constructed the sampling frame to achieve two goals: (1) ensure that participants from all programs were included in the surveying, and (2) maximize response rates. Because randomly sampling people from an aggregated list of participants would bias the sample toward the larger grantees, Mathematica ensured representation from all programs by developing a sampling frame stratified by grantee. The stratification increased the probability that participants from smaller programs would be included in the survey sample.

Mathematica maximized response rates by requiring participants to have (1) valid contact information, and (2) program experience in participants' recent memory for inclusion in the sampling frame. For the first requirement, participants without either an email or complete postal address were eliminated from the sampling frame. For the second requirement, in stage I, participants were required to be enrolled in TBL programs in 2010. This restriction helped ensure recent and accurate contact information, and allowed the survey to be administered to participants from programs that had time to develop or improve (grantees were awarded TBL grants in 2009). When contact information for 2010 enrollees was not available, as was true for two programs

(IDCEO and OC WIB), participants from other years were included in the sampling frame to ensure program representation in the survey. When enrollment dates were not available, as was true for one program (Temple), or when the program had 10 or fewer participants in 2010, as was true for another program (NOVA), all participants were included in the sampling frame.

After the parameters for the sampling frame were established, Mathematica constructed the sample for surveying. In stage I, it randomly sampled 175 people from the three grantees with more than 175 participants in the sampling frame (IDCEO, RF SUNY, and TGC) and included all people from grantees with fewer than 175 participants. This procedure identified 1,375 participants to survey and ensured that all grantees with available data were represented in the sample. It also ensured that the three larger programs still had the highest representation in the survey sample. In stage II, the participants in the two programs not included in stage I were added. All 26 of A-DA's 2010 enrollees and a random sampling of 99 of the 2010 enrollees in CSN's Nurse Refresher program were added to the survey sample. These additions increased the study's survey sample from 1,375 to a final total of 1,500.

Table A.6 shows the distribution of the population of TBL participants among grantees, the sampling frame, and the survey sample, as well as the individuals found to be eligible for surveying. As the table shows, the distribution of the TBL population among grantees differed from the distribution in the sampling frame with the criteria of having contact information and a focus on 2010 enrollment. The distribution of participants in the sampling frame also differed from that of the survey sample with the cap of 175 participants from a grantee selected for surveying. After the survey was fielded, some participants were deemed ineligible for surveying (for example, they did not participate in a TBL program, or they were deceased). The distribution of participants eligible for surveying (survey eligibles) did not differ from the distribution of the survey sample.

Table A.6. Sampling Frame and Survey Population

	TBL Population		Sampling Frame		Survey Sample		Survey Eligibles	
Grantee	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
A-DA	104	0.7	26	0.5	26	1.7	26	1.8
CSN	321	2.1	172	3.5	122	8.1	120	8.2
Dillard	238	1.6	134	2.7	134	8.9	131	8.9
GCSC	108	0.7	28	0.6	28	1.9	28	1.9
GTC	223	1.5	57	1.2	57	3.8	57	3.9
HCC [a]	637	4.3	61	1.2	57	3.8	55	3.8
IDCEO [b]	540	3.6	529	10.8	175	11.7	170	11.6
MCC [c]	183	1.2	49	1.0	49	3.3	49	3.3
NCTC	108	0.7	16	0.3	16	1.1	16	1.1
NOVA [d]	20	0.1	10	0.2	10	0.7	9	0.6
OC WIB [e]	131	0.9	25	0.5	25	1.7	25	1.7
OWATC	326	2.2	111	2.3	111	7.4	107	7.3
Reno CSA	56	0.4	4	0.1	4	0.3	4	0.3
RF SUNY	884	5.9	191	3.9	175	11.7	167	11.4
Temple CSPCD [f]	144	1.0	113	2.3	113	7.5	111	7.6
TGC	9,482	63.3	3,165	64.4	175	11.7	169	11.5
UCD [c]	173	1.2	24	0.5	24	1.6	24	1.6
WGU	222	1.5	74	1.5	74	4.9	74	5.1
WTCC	888	5.9	42	0.9	42	2.8	40	2.7
WVUP	180	1.2	83	1.7	83	5.5	82	5.6
TOTAL	**14,968**	**100.0**	**4,914**	**100.0**	**1,500**	**100.0**	**1,464**	**100.0**

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used.

[a] Four people could not be included in the sampling frame because of lack of contact information.

[b] Enrollees in 2008 and 2009 were included in the sampling frame because they were the only ones with contact information.

[c] One person was excluded from the sampling frame because of lack of contact information.

[d] Enrollees from 2009, 2010, and 2011 were included in the sampling frame with small overall enrollments.

[e] Enrollees in 2011 were included in the sampling frame because they were the ones with contact information.

[f] All participants were included in the sampling frame because the grantee provided no entry dates.

2. Administering the Survey

A web-based survey was the primary method of collecting survey data. This method was selected because participants used online tools as part of their TBL program and would likely have access to, and a relative comfort with, the internet. Two other modes of completion were also offered to boost response rates. In case participants were more comfortable completing a paper survey or had limited access to the internet after their program ended, a paper survey was sent to all members of the survey sample who had not completed the web version of the survey. During stage II, potential respondents could also complete the survey by telephone with a trained interviewer.

In both stages of surveying, potential respondents received, by mail, a hard-copy prenotification letter that included a link to the electronic version of the survey and a unique password to access it. The password identified the respondents and allowed Mathematica to link survey responses to information in the administrative data. Respondents could complete the survey online at their convenience and received a $15 gift card from Target as a token of appreciation. Nonrespondents received up to six email reminders to complete the survey online and one reminder through the mail that included a hard copy of the survey and prepaid return envelope for mailing it to Mathematica after completion. Appendix C contains a copy of the prenotification letter and hard-copy questionnaire.

The combined survey efforts yielded 710 complete and partially completed questionnaires,[32] for a 50.6 percent unweighted response rate.[33] Because three grantees in stage I (IDCEO, RF SUNY, and TGC) and one program in stage II (the CSN Nurse Refresher program) did not have all participants selected for surveying, Mathematica calculated a weighted response rate to show the percentage of the target population represented by survey respondents. This response rate uses a sampling weight (inverse of selection probability) for the four programs in which sampling took place, with weights ranging from 1.1 (RF SUNY) to 14.8 (TGC). All others were assigned a sampling weight of 1. These weights were applied to the counts to determine a weighted response rate. Because the programs in which sampling took place had among the lowest response rates (most notably, TGC had a 20.0 percent response rate[34] and 63.3 percent of all TBL enrollment), the weighted response rate stood at 33.7 percent. Table A.7 shows the disposition of the 1,500 TBL cases initially sampled for the survey.

Table A.7. Survey Disposition

	Number	Percentage
Initial sample	1,500	n.a.
Removed from sample (ineligible)[a]	36	n.a.
Total eligible sample	1,464	n.a.
Respondents		
Completes from stage I	451	30.8
Completes from stage II	238	16.3
Partial completes after stage II	21	1.4
Nonrespondents		
Refusals	8	0.5
Other nonresponse	746	51.0
Response Rates[b]		
Unweighted	n.a.	50.6
Weighted (representation in participant population)	n.a.	33.7

Note: Percentages are rounded upward.

[a] Of the 36 sample members deemed ineligible to participate, 31 were ineligible because they did not participate in the TBL program, 4 were deceased, and 1 was out of the country.

[b] Because each nonrespondent had an undetermined eligibility status, grantee-specific eligibility rates were used to estimate the number of eligible nonrespondents for each grantee. The unweighted response rate was the number of completes (including partial completes) divided by the number of known eligible and estimated eligible cases selected.

3. Analytic Variables

Information from the survey was used in descriptive analyses of participant characteristics, program satisfaction and outcomes, and multivariate analyses of program satisfaction and outcomes. Table A.8 contains a definition of the variables constructed from the survey data and used in the analysis. If information was not available to construct the variable, its value was set to missing (unless otherwise noted).

[32] The first stage of surveying yielded 451 respondents and 924 nonrespondents, and the second stage yielded an additional 236 completed and 22 partially completed questionnaires.

[33] The response rate is calculated using the Council of American Survey Research Organizations (CASRO) definition: the number of completed (C) or partially completed (P) surveys divided by the number of eligible respondents in the sample (R). The following formula was applied: Survey Response Rate = $[(C+P) / R] \times 100$.

[34] The low response rate of TGC might be the result of the short-term nature of the program. See Appendix D for a description.

Table A.8. Variables Created from Survey Data

Variable	Definition
Preprogram Knowledge of Technology	
Prior experience with online programs	An indicator variable describing participation in online or technology-based courses prior to enrolling in program, including courses that use online or web-based learning, intranets, satellite broadcasts, audio and video conferencing, bulletin boards, chat rooms, webcasts, and CD-ROM. 1 = previously participated and 0 = did not previously participate.
Preprogram internet skill level	A categorical variable describing the skill level in using the internet prior to program enrollment. 1 = beginner, 2 = intermediate, 3 = advanced, and 4 = expert. In the regression analysis, this variable contains two categories: beginner/intermediate and advanced/expert.
Reason enrolled in TBL	A categorical variable describing the primary objective for enrolling in TBL program. 1 = upgrade skills for current job, 2 = upgrade skills to get a promotion/new job or to re-enter the workforce, 3 = re-train for new career, 4 = to advance your educational goals, 5 = suggested or required by your employer, and 6 = other.
Reason for choosing TBL over traditional format	A categorical variable describing the main reason for enrolling in TBL program instead of traditional classroom-based program. 1 = distance or lack of transportation to classroom-based course, 2 = provided flexibility with my life responsibilities, 3 = program not offered in a traditional format, 4 = preference for self-paced instruction, 5 = interest in technology or the internet, 6 = financial reasons, and 7 = other.
Preprogram Education and Employment	
Highest level of school completed	A categorical variable in which 1 = high school diploma or GED credential or less, 2 = some college or AA, or AS, 3 = college graduate or more education.
Paid employment at enrollment	An indicator variable in which 1 = employed in a paid job and 0 = not employed in a paid job. A paid job is working for an employer, working in a family-run business, or self-employment, and can include full- or part-time employment.
Possibility of becoming unemployed	An indicator variable in which 1 = expecting to be unemployed, and 0 = not expecting to be unemployed (in regression analysis, this includes those who are currently unemployed). Employed prior to enrollment in the program but expecting to be unemployed soon could be due to (i) they received a notice of termination of employment, (ii) their employer issued a Worker Adjustment and Retraining Notification (WARN) or other notice that the facility was closing, or (iii) they are a transitioning service member.
Full-time work	An indicator variable in which 1 = working full-time at time of enrollment, and 0 = working part-time at time of enrollment (or not employed in regression analysis).
Hours worked per week	A continuous variable representing the number of hours worked in a typical week at the time of program enrollment.
Hourly wage rate	A continuous variable representing the wages or salary earned at the time of enrollment, in dollars and cents, including overtime pay, tips, commissions, or bonuses before taxes or other deductions. This variable is censored above $500 per hour and below $1.00 per hour.
Program Activities	
Field of study	A categorical variable describing the area of focus of the TBL program. 1 = advanced manufacturing, 2 = computer automation/robotics, 3 = construction, 4 = direct care for adults, 5 = energy management, 6 = geographic information system, 7 = information technology, 8 = nursing, 9 = transportation (for example: truck driving, mechanics), and 10 = other. For regression analysis, categories 1 and 2; 4 and 8; 5, 6, and 7; and 9 and 10 are combined.
Length of training	A continuous variable representing the number of weeks spent in the training program, including online or technology-based learning, as well as in-person class and lab time.
Hours in program per week	A continuous variable representing the number of hours spent participating in course activities in an average week, including time spent in online classes, doing online assignments or modules, in-person class time, laboratory sections, and homework.
Computer access	A categorical variable designating the computer used most often to access the training program, in which 1 = personal home computer or laptop, 2 = work computer, 3 = computer owned by the training program, 4 = AJC computer, 5 = public library computer, and 6 = other. In the regression analysis, these are classified as own computer, work computer, computer provided by training program, and other.
Online learning approach	A categorical variable describing the type of learning typically experienced during the online or technology-based portion of the program. 1 = had scheduled sessions/classes with an instructor, 2 = worked on own time without scheduled sessions/classes, and 3 = used a combination of both types. In regression analysis, an indicator for any scheduled sessions and an indicator for any time on own are used.

Variable	Definition
Time Use While in the Program	
Class time	A categorical variable describing the frequency of in-person class or lab sections with an instructor during the program. 1 = daily, 2 = weekly, 3 = monthly, 4 = rarely, and 5 = never. In regression analysis, categories used are daily or weekly, monthly, and rarely or never.
In-person peer interaction	A categorical variable describing the frequency of in-person contact with other students in the program, such as in-person class, lab sections, group projects, or study groups. 1 = daily, 2 = weekly, 3 = monthly, 4 = rarely, and 5 = never. In regression analysis, categories used are daily or weekly, monthly, and rarely or never.
Remote instructional time	A categorical variable describing the frequency of remote contact with an instructor. 1 = daily, 2 = weekly, 3 = monthly, 4 = rarely, and 5 = never. In regression analysis, categories used are daily or weekly, monthly, and rarely or never.
Remote peer interaction	A categorical variable describing the frequency of remote contact with other students in program. 1 = daily, 2 = weekly, 3 = monthly, 4 = rarely, and 5 = never. In regression analysis, categories used are daily or weekly, monthly, and rarely or never.
Services received	A series of indicator variables, one for each of the following services, in which 1 = service received during training and 0 = service not received during training. Services: 1. Assessment of computer skills 2. Assessment of vocational or career interests or abilities 3. Basic/ remedial math, reading, or writing classes 4. Career counseling 5. Child care assistance 6. English as a Second Language (ESL) instruction 7. English/math skills assessment (for example: placement test, Test of Adult Basic Education) 8. Financial assistance for test/licensing fees 9. In-kind financial assistance (for example: donated computers, internet connection) 10. Job placement assistance 11. Local job market information/counseling 12. Regular meetings with a case manager/counselor to discuss progress toward employment/educational goals 13. Resume writing, interviewing skills, or appropriate workplace behavior training/classes 14. Transportation assistance 15. Tuition assistance 16. Other In regression analyses, categories are combined: 1 and 7; 2 and 4; 3 and 6; 5, 8, 9, 14, and 15; 10, 11, and 12; 13; and 16.
Program Structure	
Program completion	An indicator variable in which 1 = completed training program and 0 = did not complete program.
Reasons for noncompletion	A series of indicator variables, one for each possible reason for not completing training program, where 1 = reason marked and 0 = reason not marked. Reasons: 1. Program is still in progress 2. Too busy 3. Found a new job 4. Computer or technical problems 5. Didn't get enough support from the instructor 6. Dropped behind in the coursework and couldn't catch up 7. Personal problems 8. Financial problems 9. Other
Credential received	An indicator variable in which 1 = credential received as a result of participation in TBL program and 0 = credential not received.
Number of credentials	A continuous variable for the number of degrees, credentials, or certificates earned as a result of participation in the TBL program.
Name of credential(s)	A series of indicator variables, one for each type of credential below, in which 1 = received credential and 0 = did not receive credential. Credentials: 1. High school diploma/GED 2. Occupational skills license (for example: LPN/LVN license, RN license, CDL) 3. Occupational skill certificate or credential (for example: community college certificate course, CNA certificate, ESL certificate, Microsoft Application certificate, IT certificate) 4. Associate's degree (AA/AS) 5. Bachelor's degree (BA/BS) 6. Master's degree, PhD, or graduate professional degree 7. Other

Variable	Definition
Program Satisfaction	
Overall satisfaction	A categorical variable representing rating of overall satisfaction with services received through training program on a scale of 1 to 10, where "1" means "very dissatisfied" and "10" means "very satisfied."
Whether learned something new	A categorical variable indicating if participant agreed or disagreed that they learned something new from the program. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Career goals	A categorical variable indicating if participant agreed or disagreed that the program will help them achieve their career goals. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Whether new skills attained	A categorical variable indicating if participant agreed or disagreed that the program helped them gain new skills or enhance existing skills. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Future TBL use	A categorical variable indicating if participant agreed or disagreed that they would consider taking online or TBL courses in the future. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Preference for traditional learning	A categorical variable indicating if participant agreed or disagreed that they prefer traditional classroom training to online or technology-based training. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Recommend program	A categorical variable indicating if participant agreed or disagreed that they would recommend the program to others. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Outcome satisfaction index	The sum of the categorical variables for whether learned something new, career goals, whether new skills attained, future TBL use, recommend program, and the inverse of preference for traditional learning.[35] Higher numbers suggest a more favorable impression of TBL.
Program Instruction	
Instruction satisfactory	A categorical variable indicating if participant agreed or disagreed that the instruction received was satisfactory. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Instructor available	A categorical variable indicating if participant agreed or disagreed that the instructor was available to answer questions. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Instructor provided feedback	A categorical variable indicating if participant agreed or disagreed that the instructor provided timely feedback on my progress. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Student-instructor interaction	A categorical variable indicating if participant agreed or disagreed that the frequency of student and instructor interaction was adequate. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Student-student interaction	A categorical variable indicating if participant agreed or disagreed that the frequency of student-to-student interaction was satisfactory. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Learning community	A categorical variable indicating if participant agreed or disagreed that they were part of a learning community. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Satisfaction with learning community index	The sum of the previous six categorical variables. Higher numbers suggest a more favorable impression of TBL.
Program Preparation	
Adequate computer skills	A categorical variable indicating if participant agreed or disagreed that their computer skills were adequate for the program. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Sufficient computer access	A categorical variable indicating if participant agreed or disagreed that they had sufficient computer access to fully participate in the program. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Technical support provision	A categorical variable indicating if participant agreed or disagreed that, if needed, the training program gave adequate support for computer or technical problems. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Computer difficulties	A categorical variable indicating if participant agreed or disagreed that they encountered computer difficulties that affected their training. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Satisfaction with technical support index	The sum of the categorical variables for adequate computer skills, sufficient computer access, technical support provision, and the inverse of computer difficulties. Higher numbers suggest a more favorable impression of TBL.
Experience with TBL	
Program convenience	A categorical variable indicating the program was a convenient way to participate in training. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Pace of learning	A categorical variable indicating a person was satisfied with the pace of learning in his or her program. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.

[35] The inverse of the variable is such that 4 = strongly disagree, 3 = disagree, 2 = agree, and 1 = strongly agree.

Variable	Definition
Flexibility with life	A categorical variable indicating that the program provided flexibility with life responsibilities. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Ease of use	A categorical variable indicating it was easy to use the online portion of the program. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Time using online component	A categorical variable indicating it took too much time to use the online or technology-based portion of the program. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Online or TBL content understandable	A variable indicating it was more difficult to understand the online or technology-based program components than traditional classroom instruction. 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.
Satisfaction with TBL index	The sum of program convenience, pace of learning, flexibility with life, ease of use, time inverse of time using online component, and the inverse of online of TBL content understandable. Higher numbers suggest a more favorable impression of TBL.
Program Outcomes	
Paid employment	An indicator variable describing whether the participant had any paid jobs since the program ended. 1 = had a paid job and 0 = did not have a paid job. A paid job means working for an employer, working in a family-run business, or self-employment and can include full- or part-time employment.
Type of employment	An indicator variable in which 1 = worked full-time in a paid job and 0 = worked part-time in a paid job since the program ended.
Hours worked per week	A continuous variable representing the number of hours worked in a typical week since the program ended.
Wages	A continuous variable representing the amount of hourly pay received in wages or salary, including overtime pay, tips, commissions, or bonuses before taxes or other deductions, since the program ended.
Sector	A categorical variable indicating the field in which the participant had a paid job since the program ended. 1 = Advanced Manufacturing, 2 = Computer Automation/Robotics, 3 = Construction, 4 = Direct Care for Adults, 5 = Energy Management, 6 = Geographic Information System (GIS), 7 = Information Technology (IT), 8 = Nursing, 9 = Transportation (for example: truck driving, mechanics), 10 = Other.
Job same as pretraining job	An indicator variable in which 1 = paid job since program ended is the same paid job that the participant had at the time they enrolled in the program and 0 = employed at another job or not employed.
Employed in field of training	An indicator variable in which 1 = sector of employment is the same as sector of training and 0 = employed in other sector or not employed.

Several of the key analytic variables used in this analysis are derived from a larger set of variables summarizing program satisfaction. Factor analysis supports the choices made about (1) how to separate variables into indexes and (2) using a simple summation of the variables in each index to summarize the data.

To determine the number of indices needed, confirmatory factor analysis was first used on all satisfaction variables available (except overall satisfaction, which is considered alone because it represents a participant's own composite). Several different methods of factor analysis (principal factor, principal-component factor, and iterated principal-factor, and maximum likelihood solution methods) all demonstrated that four factors have eigenvalues robustly greater than or approximately equal to one. This suggests that four composite variables would represent participant satisfaction reasonably well.

Setting the number of principal component factors to four, factor analysis was then used to confirm the categorization of individual variables into factors. Assigning the satisfaction variables to the categories indicated above (and suggested by theory) results in classification very similar to the assignment suggested by using the maximum factor loadings from the analysis.

Once categorized, as a final confirmation, factor analysis was performed for the selected subgroups of variables. Factor analysis for each subset of variables yields a single eigenvalue over one. Moreover, these analyses suggest relatively equal weighting of each of the variables in their assigned category. Thus, simple sums of the satisfaction variables, as categorized *a priori,* are used to summarize participant program experience.

4. Missing Survey Data

The survey data had far lower levels of missing data than did the administrative data (see Table A.9). In general, the preprogram knowledge of technology and preprogram education and employment data elements had less than two percent of missing information. Missing data rates for the program activities information were a bit higher; they were between two and eight percent. In general, program satisfaction and outcome information had missing data rates between 3.5 and 5.5 percent.

Table A.9. Missing Survey Data

Variable	Percentage Missing
Preprogram Knowledge of Technology	
Prior experience with online programs	0.6
Preprogram internet skill level	0.6
Reason enrolled in TBL	1.4
Reason for choosing TBL over traditional format	1.5
Preprogram Education and Employment	
Highest grade completed	0.8
Paid employment at enrollment	1.5
Possibility of becoming unemployed	2.0
Full-time or part-time	1.7
Hours worked per week	2.0
Hourly wage rate	2.1
Program Activities	
Sector	2.3
Length of training (in weeks)	2.7
Hours in program per week	2.5
Use of computers	3.8
Instructional time	3.9
Peer interaction	4.9
Remote instruction/interaction	4.4
Remote interaction with peers	4.4
Components	
Technical support	3.2
Program structure	3.4
Other services received	3.0
Program completion	3.2
Reasons for noncompletion	3.0
Credential received	3.2
Number of credentials	7.6
Name of credential(s)	3.1
Program Satisfaction	
Overall satisfaction	3.7
Whether learned something new	4.2
Whether new skills attained	5.5
Career goals	4.6
Future TBL use	4.5
Preference for traditional learning	5.4
Recommend program	4.8
Satisfaction with services received	3.7
Program Outcomes	
Paid employment	3.4
Full-time or part-time	3.5
Hours worked per week	3.7
Wages	5.1
Sector	5.2
Job same as pretraining job	3.5

APPENDIX B

SAMPLE CHARACTERISTICS AND WEIGHTS

The primary analysis in this report uses information on three groups of TBL participants:

1. The **TBL population** contains all 14,986 TBL participants in the administrative data.
2. The **analytic sample** contains a sample of the TBL population—5,009 TBL participants—that had complete administrative data on seven key variables: (1) completed training program; (2) attained degree, credential, or certificate; (3) entered unsubsidized employment; (4) entered training-related employment; (5) gender; (6) race; and (7) education status at enrollment.
3. **Survey respondents** include the sample of 710 survey participants who completed a survey. This sample is a subset of the 1,464 **survey eligibles** (of the 1,500 TBL participants selected for surveying) that were eligible to take the survey (see Appendix A for discussion).

This appendix examines the differences between these groups by comparing information from the administrative data on program participation, participant characteristics, and participant outcomes. It uses the TBL population as the group to which the others are compared.[36] Such comparisons help uncover the extent to which groups differ from the broader population of TBL participants, as differences between them could limit the ability to extrapolate unweighted analysis to analysis of the population of TBL program participants. Section A describes differences between the groups using both descriptive and multivariate analysis, and Section B discusses the weights that were developed and applied to the statistical analysis presented in the text to capture the characteristics of the average participant in the average grantee and better allow our results to apply to the broader TBL population.

A. Differences in Characteristics Between Groups

Descriptive and multivariate analyses are used to examine differences in the characteristics between the population of TBL participants and the analytic sample, survey eligibles, and survey respondents. Differences in patterns of the distribution of characteristics and outcomes are compared using chi-square tests to determine if statistically significant ($p \leq 0.05$) differences exist. If significant differences exist, individual categories are compared using two-tailed *t*-tests to test for statistically significant differences. *T*-tests are also used to test for statistically significant differences between indicator variables.

Table B.1 shows these comparisons. The unweighted data in this table highlight dramatic differences in program participation, participant characteristics, and participants between the groups. Some grantees may not be represented in the analytic sample because of missing data (as discussed in Appendix A), even though they are at least some small proportion in the TBL population. The table also shows that the distribution of grantees is far more equal in the survey data (by design) than in the administrative data.

[36] Such a comparison presumes that the characteristics of the administrative data population reflect those of TBL students, even though complete information is not available for all individuals. By using the distribution of characteristics in this population as the benchmark, we implicitly assume that those with missing data have the same characteristics as those with valid information.

Table B.1. Differences in Characteristics of Administrative and Survey Populations and Samples (percentages except where noted)

	Administrative Data		Survey Data	
	Population	Analytic Sample	Eligibles	Respondents
Number Participants	14,968	5,009	1,464	710
Grantee				
A-DA	0.7	2.0*	1.8*	2.0*
CSN	2.1	0.5*	8.2*	5.2*
Dillard	1.6	0.0*	9.0*	4.8*
GCSC	0.7	2.5*	1.9*	1.8*
GTC	1.5	1.1*	3.9*	5.8*
HCC	4.3	0.9*	3.8	3.5
IDCEO	3.6	0.1*	11.6*	9.3*
MCC	1.2	0.0*	3.3*	4.1*
NCTC	0.7	0.0*	1.1	1.6*
NOVA	0.1	0.0*	0.6*	1.4*
OC WIB	0.9	0.4*	1.7*	2.5*
OWATC	2.2	0.2*	7.3*	8.6*
Reno CSA	0.4	2.7*	0.3	0.3
RF SUNY	5.9	4.1*	11.4*	16.0*
Temple CSPCD	1.0	0.0*	7.5*	10.0*
TGC	63.3	84.0*	11.6*	4.0*
UCD	1.2	1.3	1.6	2.8*
WGU	1.5	0.0*	5.1*	7.2*
WTCC	5.9	0.0*	2.7*	2.7*
WVUP	1.2	0.0*	5.6*	6.4*
Chi-Squared Statistic (compared to population distribution)	n.a.	2,495.2*	3,490.7*	2,121.4*
Participant Characteristics				
Age				
18-24	16.0	17.6*	18.1	14.1
25-44	50.2	48.8*	52.5	50.8
45 and older	33.4	33.1	29.1*	34.7
Chi-Squared Statistic (compared to population distribution)	n.a.	14.2*	10.8*	1.6
Average	39.2	39.0	37.7*	39.2
Percent missing	34.3	17.5	28.8	29.3
Gender				
Male	33.6	26.4*	40.0*	35.2*
Female	66.4	73.6*	60.0*	64.8*
Chi-Squared Statistic (compared to population distribution)	n.a.	225.1*	25.5*	12.7*
Percent missing	30.8	0.0	17.6	12.8
Race/Ethnicity				
Asian/Pacific Islander	1.9	0.5*	5.1*	7.5*
Black	55.8	71.9*	38.6*	29.6*
Native American	0.4	0.3	0.6	0.8
White	38.0	24.6*	51.5*	57.9*
Hispanic	3.1	1.9*	3.8	3.8
Other	0.7	0.9*	0.3	0.4
Chi-Squared Statistic (compared to population distribution)	n.a.	1,117.5*	182.7*	221.6*
Percent missing	33.9	0.0	30.5	25.4
Education				
Not completed high school/GED	0.5	0.3*	2.1*	0.5
High school/GED	71.2	79.5*	46.3*	28.9*
Some college	4.4	2.2*	13.1	19.2
Associate's degree	10.0	9.3*	10.2*	11.0*
Bachelor's degree	10.5	7.0*	22.4*	33.9*
Graduate degree	3.3	1.7*	6.0*	6.6*
Chi-Squared Statistic (compared to population distribution)	n.a.	397.4*	374.9*	510.6*
Percent missing	28.0	0.0	48.3	46.3

	Administrative Data		Survey Data	
	Population	Analytic Sample	Eligibles	Respondents
Low-Income/Public Assistance Recipient	57.4	42.0*	47.0*	39.6*
Percent missing	90.1	93.4	64.9	66.9
Limited English Proficiency	0.3	0.0*	4.6*	7.7*
Percent missing	27.3	7.0	58.2	61.5
Veteran	9.9	11.6	7.6*	6.8*
Percent missing	83.1	88.3	49.8	41.8
Has a Disability	7.5	23.4*	7.5	7.4
Percent missing	84.5	89.8	54.3	46.9
Employment Status at Enrollment				
Not employed	9.8	7.3*	35.5*	36.8*
Employed part-time	2.7	1.1*	8.9*	8.1*
Employed full-time	4.8	1.4*	12.3*	18.6*
Employed – hours unknown	82.8	90.2*	43.3*	36.5*
Chi-Squared Statistic (compared to population distribution)	n.a.	364.1*	961.1*	577.7*
Percent missing	16.2	4.2	45.4	47.9
Participant Outcomes				
Exited Training Program	92.3	87.5*	91.3	93.4
Percent missing	72.4	86.6	39.2	32.1
Length of Time Since Exit, in Months (includes 0 for not leaving)	22.8	22.5	16.3	15.5
Percent missing	80.4	7.7	50.4	44.2
Completed Training Program	92.6	97.4*	78.9*	78.7*
Percent missing	18.2	0.0	20.2	21.3
Degree, Credential, or Certificate Attained	88.8	97.6*	77.1*	76.1*
Percent missing	19.6	0.0	39.2	37.6
Entered Unsubsidized Employment	97.6	97.9	92.2*	91.6*
Percent missing	23.2	0.0	52.1	49.4
Entered Training-Related Employment	93.9	93.1*	71.8*	65.0*
Percent missing	24.3	0.0	56.4	56.2
Industry Sector of Employment				
Construction	1.0	2.2*	11.4*	7.6*
Energy/Information Technology	2.8	4.8*	14.3*	21.3*
Health	93.0	90.0*	60.3*	51.7*
Manufacturing	0.2	0.4*	1.1*	1.1*
Transportation	0.0	0.1*	0.4*	0.4*
Other	2.9	2.4	12.6*	17.9*
Chi-Squared Statistic (compared to population distribution)	n.a.	327.7*	1,249.0*	740.8*
Percent missing	26.3	2.2	62.1	63.0

Source: Administrative data from TBL grantees and participant survey.

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used. Training-related employment for Dillard participants is extrapolated from occupation data provided by the grantee. If the occupation appeared related to training, participants were considered as entering training-related employment.

* The difference between the population and sample is significantly different at the $p \leq 0.05$ level, two-tailed *t*-test (not computed for variables indicating the percentage missing).

The descriptive statistics presented in Table B.1 show large differences in participant characteristics across samples. The TBL population tends to be older than those in the samples. A larger proportion of each survey sample is male, but the analytic sample has more women. The analytic sample contains significantly fewer Asians, whites, and Hispanics but more African Americans than the TBL population, but the survey samples contain more whites and Asians and fewer African Americans. All samples are less likely to have low income and to have limited English proficiency and the survey-eligible or survey respondent samples are significantly more likely than the TBL population to have veterans.

The employment patterns of people at enrollment and after program exit also differ significantly across the groups. The most notable difference is that non-employment at entrance is more than three times as common in the survey samples as in the TBL population or analytic sample. Those in the analytic sample are significantly more likely than the TBL population to have completed their program or to have obtained a degree, license, or credential, although differences are relatively small. Survey eligibles and survey respondents are less likely to have data indicating they completed their program or obtained a degree, license, or other credential and are less likely to be in unsubsidized or training-related employment after program participation, with most of the differences both large and significant. Industry of employment after the program also varies by sample, with the survey samples less commonly employed in the health sector compared to the TBL population or analytic sample. Many of these differences stem from the combination of differences in the distribution of grantees across samples and in the populations targeted by grantees. That is, because not all grantees have participants in all samples (for example, eight grantees did not provide complete information on any participant and are not in the analytic sample) and because grantees have different populations for participant enrollment than populations reported to the FPO, the characteristics of the samples will vary because grantees are represented in different proportions in each sample.

This descriptive analysis provides a broad view of how samples differ and reveals general variation across samples. These statistics do not, however, reveal which variables predict sample inclusion when other key terms are held constant. They also cannot parse out which differences are due to variation in individuals across grantees versus differences within grantees.

Regression analysis is required for these tasks and allows one to assess which characteristics are most strongly associated with one sample compared to another. Thus, a probit analysis is used to estimate the probability of a TBL participant being in each of the three samples of interest (indicated by $Y_{ipj} = 1$ if participant i is attending program p and is in group j). The analysis controls for the characteristics of participants available in the administrative data (X_i, including indicators for key variables being missing for individual i) and program fixed effects (γ_{ipj}):

$$\Pr\left(Y_{ipj} = 1 \mid X_i\right) + \Phi\left(z_{ipj}\right) = \Phi\left(\alpha + X_i\beta_j + \gamma_{ipj}\right)$$

Although using a probit model to perform multivariate analyses allows for a more rigorous assessment of the differences among the groups than does the descriptive analysis, it has one key drawback: how to handle cases in which one of the X or γ_{pj} variables perfectly predicts that Y_{pj} is one or zero. This occurs if all individuals with a certain characteristic are members (or not) of a particular sample. For example, no CSN participant is part of the analytic sample, because this grantee did not collect information on race. The analysis in this appendix proceeds by assuming that z_j approaches positive or negative infinity if an individual has a characteristic that perfectly predicts inclusion or exclusion a group.[37] With this caveat in mind, statistically significant probit coefficients ($p \leq 0.05$, two-tailed test) are used to assess whether the characteristics of the various groups differed from the characteristics of the population provided in the administrative data. Table B.2 contains the marginal effects derived from estimating these equations.

[37] The regressions were also estimated using linear probability models and excluding any observations with characteristics leading to perfect predictions of sample inclusion. These methods produced similar results.

Table B.2. Differences in Characteristics of Administrative and Survey Populations and Samples (marginal effects from probit regressions)

	Administrative Data	Survey Data		
	Probability In Analytic Sample	Probability Eligible for Surveying	Probability Responding, Given Eligible for Surveying	Overall Probability of Responding to a Survey
Number participants in sample (of the 14,968 in estimation)	**5,009**	**1,464**	**710**	**710**
Grantee				
TGC omitted category				
A-DA	0.965*	0.315	0.344*	0.162
	(0.063)	(0.226)	(0.135)	(0.143)
CSN	-0.018ˇ	0.360	-0.335*	0.107
	(0.011)	(0.291)	(0.145)	(0.119)
Dillard	-0.000	0.423	0.315*	0.085
	(0.029)	(0.217)	(0.093)	(0.067)
GCSC	0.890*	0.437*	0.351*	0.259*
	(0.213)	(0.206)	(0.082)	(0.128)
GTC	-0.009	0.348	0.227*	0.153
	(0.019)	(0.214)	(0.097)	(0.106)
HCC	-0.022	-0.025	-0.063	-0.007
	(0.014)	(0.035)	(0.139)	(0.009)
IDCEO	-0.017ˇ	0.730*	0.528*	0.624*
	(0.010)	(0.273)	(0.095)	(0.227)
MCC	-0.018ˇ	0.162	0.318*	0.091
	(0.011)	(0.204)	(0.106)	(0.096)
NCTC	-0.016ˇ	0.498	0.400*	0.369
	(0.010)	(0.365)	(0.090)	(0.236)
NOVA	0.027	0.453	0.521*	0.318ˆ
	(0.079)	(0.257)	(0.002)	(0.188)
OC WIB	-0.015	0.018	-0.099	0.007
	(0.010)	(0.079)	(0.344)	(0.026)
OWATC	-0.013	0.163	0.055	0.073
	(0.014)	(0.230)	(0.147)	(0.112)
Reno CSA	0.052	0.109	0.413*	0.0473
	(0.131)	(0.127)	(0.070)	(0.053)
RF SUNY	0.005	0.246	0.272*	0.149
	(0.043)	(0.242)	(0.136)	(0.138)
Temple CSPCD	-0.018ˇ	0.820*	0.343*	0.476*
	(0.011)	(0.173)	(0.080)	(0.205)
UCD	-0.015	0.047	0.262*	0.010
	(0.009)	(0.130)	(0.121)	(0.036)
WGU	-0.019ˇ	0.053	0.143	0.031
	(0.011)	(0.112)	(0.125)	(0.057)
WTCC	-0.035ˇ	0.008	-0.208	0.004
	(0.019)	(0.085)	(0.209)	(0.022)
WVUP	-0.020ˇ	0.083	-0.112	0.018
	(0.012)	(0.168)	(0.160)	(0.044)
Chi-Squared Statistic	2842.46*	16947.44*	981.79*	1290.37*
Participant Characteristics				
Age (25-44 omitted category)				
18-24	0.013*	0.002	-0.059	-0.002
	(0.004)	(0.007)	(0.071)	(0.003)
45 and older	8.64e-05	-0.006	0.081	0.002
	(0.001)	(0.004)	(0.048)	(0.002)
Missing	-0.018	-0.044*	-0.046	-0.008*
	(0.011)	(0.008)	(0.054)	(0.003)
Chi-Squared Statistic	2098.58*	24.69*	6.05	5.81
Gender (male omitted category)				
Female	0.094*	-0.014*	0.067	-0.002
	(0.034)	(0.004)	(0.051)	(0.002)
Gender missing	n.a.	-0.032*	-0.078	-0.011*
		(0.010)	(0.054)	(0.002)

	Administrative Data	Survey Data		
	Probability In Analytic Sample	Probability Eligible for Surveying	Probability Responding, Given Eligible for Surveying	Overall Probability of Responding to a Survey
Race/Ethnicity (white omitted category)				
Asian/Pacific Islander	0.076*	0.006	0.181*	0.005
	(0.038)	(0.013)	(0.055)	(0.004)
Black	0.112*	0.009	0.045	0.003
	(0.041)	(0.006)	(0.079)	(0.003)
Native American	0.161*	0.019	-0.001	0.010
	(0.050)	(0.037)	(0.199)	(0.016)
Hispanic	0.132*	-0.001	0.030	-0.001
	(0.050)	(0.013)	(0.074)	(0.003)
Other	0.139*	-0.006	0.411*	0.009
	(0.024)	(0.031)	(0.050)	(0.021)
Missing	n.a.	0.004	-0.001	0.003
		(0.015)	(0.059)	(0.004)
Chi-Squared Statistic	42239.78*	4.33	53.27*	3.22
Education (HS/GED omitted category)				
Not completed high school/GED	0.096	0.037	-0.192*	-0.007*
	(0.112)	(0.028)	(0.085)	(0.003)
Associate's degree	0.014*	0.002	0.001	0.001
	(0.007)	(0.012)	(0.075)	(0.004)
Bachelor's degree	0.014*	0.018	0.158*	0.013
	(0.005)	(0.019)	(0.073)	(0.009)
Graduate degree	0.006	6.42e-05	-0.041	-0.001
	(0.006)	(0.016)	(0.090)	(0.004)
Missing	n.a.	0.101*	0.106	0.032*
		(0.031)	(0.098)	(0.010)
Chi-Squared Statistic	180.14*	32.51*	22.96*	55.97*
Low-Income/Public Assistance Recipient	0.003	-0.005	-0.141*	-0.005*
	(0.016)	(0.008)	(0.065)	(0.002)
Missing	-0.044	0.025	0.299*	0.010*
	(0.090)	(0.018)	(0.070)	(0.002)
Limited English Proficiency	-0.015˘	0.820*	0.241	0.429*
	(0.009)	(0.169)	(0.240)	(0.204)
Missing	0.360*	0.028	0.126	0.006
	(0.105)	(0.058)	(0.082)	(0.015)
Veteran	0.030	-0.006	0.016	-0.001
	(0.023)	(0.006)	(0.068)	(0.003)
Missing	-0.008	-0.202	-0.119	-0.095
	(0.014)	(0.191)	(0.100)	(0.099)
Has a Disability	-0.002	0.008	-0.053	0.001
	(0.010)	(0.017)	(0.109)	(0.005)
Missing	0.009*	0.031	-0.027	0.005
	(0.004)	(0.042)	(0.052)	(0.012)
Employment Status at Enrollment (not employed omitted category)				
Employed part-time	-0.013	0.010	0.079*	0.007*
	(0.008)	(0.008)	(0.025)	(0.003)
Employed full-time	-0.013	0.023	0.071*	0.011*
	(0.007)	(0.013)	(0.023)	(0.005)
Employed, hours unknown	-0.025	0.004	-0.007	0.000
	(0.017)	(0.007)	(0.037)	(0.002)
Missing	-0.059*	-0.001	-0.011	-0.001
	(0.026)	(0.022)	(0.074)	(0.007)
Chi-Squared Statistic	65.99*	4.53	13.55*	11.08*
Exited from Program	-0.044*	0.054	-0.291*	0.006
	(0.018)	(0.057)	(0.124)	(0.013)
Missing	-0.565*	0.061*	-0.492*	0.009
	(0.278)	(0.028)	(0.105)	(0.008)

	Administrative Data	Survey Data		
	Probability In Analytic Sample	Probability Eligible for Surveying	Probability Responding, Given Eligible for Surveying	Overall Probability of Responding to a Survey
Length of Time Since in Months Exit (includes 0 for not leaving)	0.000 (0.000)	-0.000 (0.000)	-0.008* (0.003)	-0.000* (0.000)
Missing	-0.027 (0.015)	-0.029* (0.010)	-0.046 (0.111)	-0.004 (0.002)
Completed Program	0.037* (0.016)	-0.036 (0.030)	0.092 (0.159)	-0.007 (0.009)
Missing	n.a.	-0.003 (0.031)	0.187 (0.104)	0.005 (0.009)
Degree, Credential, or Certificate Attained	0.012 (0.007)	0.018 (0.024)	0.018 (0.139)	0.008 (0.006)
Missing	n.a.	-0.007 (0.030)	-0.163 (0.095)	-0.002 (0.008)
Entered Unsubsidized Employment	0.057* (0.021)	0.038* (0.017)	0.231* (0.079)	0.013* (0.004)
Missing	n.a.	0.062 (0.037)	0.078 (0.088)	0.014 (0.011)
Entered Training-Related Employment	0.024* (0.012)	-0.008 (0.026)	-0.118* (0.053)	-0.005 (0.008)
Missing	n.a.	-0.027 (0.024)	-0.027 (0.081)	-0.005 (0.006)
Industry Sector of Employment (health omitted category)				
Construction	0.987*^ (0.008)	-0.001 (0.021)	0.061 (0.078)	0.006 (0.009)
Energy/Information Technology	0.109 (0.084)	-0.004 (0.018)	0.011 (0.077)	-0.000 (0.005)
Manufacturing	0.002 (0.033)	-0.012 (0.021)	-0.050 (0.189)	-0.007 (0.004)
Transportation	0.986*^ (0.009)	0.001 (0.074)	-0.254* (0.078)	-0.004 (0.010)
Other	0.097 (0.073)	-0.005 (0.022)	0.008 (0.062)	-0.001 (0.006)
Missing	-0.001 (0.021)	0.007 (0.024)	0.098 (0.092)	0.005 (0.008)
Chi-Squared Statistic	26.71*	0.69	57.35*	14.93*

Sources: Administrative data provided by TBL grantees.

Notes: See the list of acronyms at the beginning of the report for definitions of all acronyms used. The first column shows estimated coefficients (and standard errors) for the estimation of whether the participant is in the analytic sample. The second column shows results for whether the participant is in the sample for surveying (and eligible to be there). The third column shows results for whether a member of the sample for surveying completed a survey. The fourth column shows results for the overall probability that a participant in the administrative data completed a survey.

[v] = perfectly predictive of outcome = 0; ^ = perfectly predictive of outcome = 1; * = $p \leq 0.05$; n.a. = not applicable (no cases were missing).

Recall that an observation's inclusion in the analytic sample required nonmissing data on key outcomes and key demographics. Therefore, participants of certain programs (which may have been more vigilant about data collection) have a significantly greater chance of inclusion in this sample. Compared to participants at TGC (the largest grantee and omitted category), those from A-DA and GCSC were far more likely to be members of the analytic sample (a joint test that all grantee fixed effects are zero is also rejected with a *p*-value under 0.001). Similarly, participants not reporting other important variables (for example, their employment status at enrollment) were less likely to be included in it.

Women were more likely than men to be in the analytic sample, and racial minorities were more likely than whites to be included. Education and age were also predictive of inclusion in the analytic sample, but the coefficients on indicators for these variables were generally quite small. Program completion and being employed after a program (both overall and in a training-related job) were also positively related to inclusion in this sample, potentially suggesting a correlation between program success and a program's willingness to provide key information.

Based on the construction of the sample frame for the survey data, respondents from smaller grantees should be more likely to be included in the survey population. The regression results in column 2, "Probability Eligible for Surveying," in Table B.2 confirm this, with smaller grantees having generally larger coefficients, some of which are significant. Age and education are not significant predictors of inclusion in the survey population, although people missing information on age are less likely to be members of the sample, and those without information on education are more likely to be members. Finally, limited English proficiency strongly predicts inclusion; however, the small number of participants with this characteristic gives the estimated impact a relatively large standard error. Other relationships are small and/or insignificant.

In considering the respondent sample (which is this study's analytic focus), two steps of selection are of interest. First, an observation is either in the sample for surveying (and eligible to be there) or not (Table B.2, column 2). Second, given that one is asked to complete a survey, one may respond or not (column 3). This two-step decision is summarized by the overall probability that the person in the administrative data is a member of the respondent sample (column 4). Because more observations are eliminated in step 1 than in step 2, the results presented in column 4 greatly resemble column 2.

The results presented in column 3 demonstrate large differences in the probability of responding to a survey across grantees. The program a person attended is nearly always a significant predictor of survey response, with IDCEO, NOVA, and Temple CSPCD producing the largest response. People with more education were also more likely to return completed surveys, as were those employed at program enrollment and reporting their hours.

Employment status at the time of the survey is also predictive of response rates, with a positive and significant coefficient on the indicator for posttraining employment and a smaller, but still significant, negative coefficient on the indicator for posttraining employment in the field of training. Program exit and missing data on program exit are strong predictors of sample inclusion. Finally, those who have been out of their training program longer are less likely to respond to the survey. A few other variables enter the regression significantly, but the small number of positive responses for these indicators makes interpretation of the results tenuous.

Altogether, these regression results suggest that the respondent sample over-represents observations from smaller grantees, as well as higher-income people who are more likely to be employed both before and after program participation. The weighting scheme used partially remedies this issue by putting the same weight on each grantee in the respondent and administrative samples. Nonetheless, the results of this study should be interpreted with these differences in mind.

B. Weights

As the results in Tables B.1 and B.2 demonstrate, the different samples used in our analysis may represent different slices of the TBL population. To better reflect the TBL population, all samples are reweighted so that statistics represent the characteristics or experience of the average participant at the average TBL grantee program.[38] That is, in sample *j*, participant *i* at grantee *g* receives a weight($w_{ij}(g)$) that is inversely proportion to N_{jg} (the number of observations for grantee *g* in sample *j*) and proportional to N_j (the total number of observations in sample *j*). This implies that, if a grantee has more observations, individuals who participated in a program at that grantee each get less weight, but the total weight given to the grantee does not change. Formally:

$$w_{ij}(g) = \frac{N_j}{N_{jg} \sum_k 1/N_{jk}} \text{ if } N_{jg} > 0 .$$

The design of this weighting scheme also corrects for differences in sampling probabilities and response rates across grantees and differences across programs within a grantee for CSN (the one grantee with two programs, only one of which was subject to sampling). After weighting, the distribution of individuals across grantees is identical for the TBL population and the survey respondent sample, the two main data sets used in this analysis. Moreover, although some differences remain, the characteristics of the two samples converge when the data are weighted and samples become less likely to differ in a statistically significant way.

[38] An alternative weighting scheme would construct weights so that the average TBL participant was considered. This is rejected because the sample would be dominated by participants in TGC, a rather atypical TBL program with 63 percent of the TBL participants.

APPENDIX C

TECHNOLOGY-BASED LEARNING SURVEY MATERIALS

APPENDIX C.1

PRENOTIFICATION LETTER

MATHEMATICA
Policy Research

Elisha Smith Arillaga
Survey Director

505 14th Street, Suite 800
Oakland, CA 94612-1475
Telephone (510) 830-3700
Fax (510) 830-3701
www.mathematica-mpr.com

[Date]

[First Name] [Last Name]
[Address]
[City], [State] [Zip]

Dear ***[fill Respondent Name]:***

The U.S. Department of Labor has contracted with Mathematica Policy Research to evaluate online and technology-based learning programs. As part of that evaluation, we are conducting a survey of participants of the programs and would like to ask you to help us by completing a survey. You may have received emails and a letter last fall describing our evaluation and asking for your feedback. We are seeking another round of feedback and hope to hear from you this year. Your feedback is very important to us because we want our evaluation to reflect the opinions of all individuals who were enrolled in programs nationwide. We are very much hoping to hear from you. In appreciation for completing the survey, you will receive a $15 gift card. The survey should take approximately 20 minutes to complete.

Our records indicate that you were enrolled in a technology-based learning program, [fill Program Focus] at ***[fill Grantee Name].*** Our short online survey will ask you about your experiences in this program. You can complete the survey electronically at ***[fill survey website link]*** by entering this user name ***[fill User Name]*** and access code ***[fill Access Code].***

If you prefer to complete a paper version of the survey, you can complete the enclosed questionnaire instead. In completing the paper version of the survey, just answer each question with the response(s) that best fits your opinion and experience. If the response you choose has an arrow next to it (→), there are directions to the right of the arrow that explain what question you should answer next. If your response has no arrow next to it, simply go on to the next question. After completing the survey, please place it in the enclosed postage-paid envelope and drop it in the mail.

Please know that the only purpose of this survey is **research,** and your participation will not impact your access to services provided by [fill Grantee Name]. *Your answers will be kept strictly confidential and will only be reported after combining them with those of other respondents so that no individual person can be identified.* In accordance with the Confidential Information Protection and Statistical Efficiency Act of 2002 (Title 5 of Public Law 107-347) and other applicable federal laws, your responses will not be disclosed in identifiable form without your informed consent. This voluntary information request has been approved by the Office of Management and Budget under

OMB approval number, 1205-0479 expiring 1/31/2014. Without this approval, we would not be able to conduct this survey. Questions regarding any aspect of this survey may be directed to Ms. Michelle Ennis, the U.S. Department of Labor, Employment, and Training Administration, Room N-5641, 200 Constitution Avenue, N.W., Washington, D.C. 20210, 1-202-693-3636, (Paperwork Reduction Project 1205-0479).

If you have any questions about the survey, please contact Dr. Elisha Smith Arrillaga, Survey Director or Mr. Richard Godwin, Survey Operations Supervisor at 1-877-840-4740 or email TBL@mathematica-mpr.com. Thank you very much for your time and consideration.

Sincerely,

Elisha Smith Arrillaga

APPENDIX C.2

SURVEY

MATHEMATICA Policy Research

Technology-Based Learning Survey

October 30, 2012

Public Burden Statement

According to the Paperwork Reduction Act of 1995, persons are not required to respond to this collection of information unless it displays a currently valid OMB control number and expiration date. Responding to this questionnaire is voluntary. Public reporting burden for this collection of information is estimated to average 20 minutes per response. Send comments regarding this burden estimate to Ms. Michelle Ennis, U.S. Department of Labor, Office of Policy Development and Research, Room N5641, 200 Constitution Avenue, NW, Washington, DC 20210. **Do NOT send the completed questionnaire to this address.**

INSTRUCTIONS FOR COMPLETING THE SURVEY

As you read through the survey, answer each question with the response that best fits your experience or opinion. For most questions this means circling the response associated with your answer; for a small number of other questions it means filling in a blank.

If you have any questions or concerns about the survey, please feel free to contact the Survey Operations Coordinator, Mr. Richard Godwin, by phone at 1-877-840-4740 or email at TBL@mathematica-mpr.com. Thank you for your participation.

These first questions ask about your background before you enrolled in the technology-based training program.

1. Prior to enrolling in this program, had you ever participated in any kind of online or technology-based courses before?

This can include courses that use electronic technology like online or web-based learning, intranets, satellite broadcasts, audio and video conferencing, bulletin boards, chat rooms, webcasts, and CD-ROM.

1 ☐ Yes

0 ☐ No

2. Prior to enrolling in this program, how would you rate your skill level at using the internet?

MARK ONE ONLY

1 ☐ Beginner

2 ☐ Intermediate

3 ☐ Advanced

4 ☐ Expert

3. Prior to enrolling in this program, what was the highest level of school you had completed?

MARK ONE ONLY

1 ☐ Had not received High School Diploma or GED

2 ☐ High School Diploma or GED

3 ☐ Some college, but no degree

4 ☐ Associate's Degree (AA/AS)

5 ☐ Bachelor's Degree (BA/BS)

6 ☐ Graduate Degree

4. What was your *primary* objective in deciding to enroll in this technology-based training program?

If you had more than one objective please think of the main reason you enrolled.

MARK ONE ONLY

1 ☐ Upgrade skills for current job

2 ☐ Upgrade skills to get a promotion/new job or to re-enter the workforce

3 ☐ Re-train for new career

4 ☐ To advance your educational goals

5 ☐ Suggested or required by your employer

6 ☐ Other (*Please specify)*

_____

_____

5. Why did you decide to enroll in this technology-based training program instead of a traditional classroom-based program?

MARK ALL THAT APPLY

1 ☐ Distance or lack of transportation to classroom-based course

2 ☐ Provided flexibility with my life responsibilities (For example: work, housework, family life)

3 ☐ The program was not offered in a traditional format

4 ☐ Preference for self-paced instruction

5 ☐ Interest in technology or the internet

6 ☐ Other *(Please specify)*

_____

_____

6. Were you employed in a paid job at the time you enrolled in this program?

A paid job means working for an employer, working in a family-run business, or self-employment; and can include full- or part-time employment.

1 ☐ Yes

0 ☐ No → **SKIP TO Q.11**

7. When you enrolled in this program, did you expect to be unemployed soon?

Expecting unemployment means that you received a notice of termination of employment, your employer issued a Worker Adjustment and Retraining Notification (WARN) or other notice that the facility was closing, or you are a transitioning service member.

1 ☐ Yes

0 ☐ No

The next few questions ask about the job where you were working when you enrolled in this technology-based training program. If you had more than one job, please answer the questions about the job in which you worked the most hours.

8. At the time you enrolled in this training program, did you work full-time or part-time at this job?

1 ☐ Full-time

2 ☐ Part-time

9. At the time you enrolled in this program, approximately how many hours did you work in a typical week at your job?

|__|__| NUMBER OF HOURS WORKED IN A TYPICAL WEEK

10. At the time you enrolled in this program, what was your wage or salary?

Please include overtime pay, tips, commissions, or bonuses <u>before</u> taxes or other deductions. Please provide an amount, in dollars and cents, and select a response to indicate if this is per hour, week, month, or year.

$ |__|__|__|,|__|__|__|.|__|__| PER
Dollars Cents

MARK ONE ONLY

1 ☐ Hour

2 ☐ Week

3 ☐ Every other week

4 ☐ Month

5 ☐ Year

These next questions ask about the technology-based training program offered by the program in which you were enrolled. For these questions a training program is defined as a course or series of courses designed to lead to at least one degree, credential, or certificate.

11. Which of the following best describes the area this program was in?

1 ☐ Advanced Manufacturing

2 ☐ Computer Automation/Robotics

3 ☐ Construction

4 ☐ Direct Care for Adults

5 ☐ Energy Management

6 ☐ Geographic Information System (GIS)

7 ☐ Information Technology (IT)

8 ☐ Nursing

9 ☐ Transportation (For example: truck driving, mechanics)

10 ☐ Other *(Please specify)*

_____

_____

12. Approximately how many weeks did you spend in your training program?

Please think about the time you spent doing online or technology-based learning as well as in-person class/lab time.

|__|__| NUMBER OF WEEKS IN TRAINING PROGRAM

13. During your training program, about how many hours did you spend participating in course activities in an average week?

Please include any time spent in online classes, doing online assignments or modules, in-person class time, laboratory sections, and homework.

|__|__| NUMBER OF HOURS PER WEEK IN TRAINING PROGRAM

14. When you needed to use a computer to access your training program, which one of the following computers did you use most often?

1 ☐ Personal home computer or laptop

2 ☐ Work computer

3 ☐ Computer owned by the training program (For example: school computer, computer lab, loaned laptop)

4 ☐ One-Stop Career Center computer

5 ☐ Public library computer

6 ☐ Other *(Please specify)*

_____

_____

15. When you were using the *online or technology-based* portion of your training program, did you typically:

1 ☐ Have scheduled sessions/classes with an instructor?

2 ☐ Work on your own time without scheduled sessions/classes?

3 ☐ Use a combination of both types?

16. How frequently did you have *in-person* class or lab sections with an *instructor* during your program?

Please do not include lab sections or internships/externships where your instructor was not present.

1 ☐ Daily

2 ☐ Weekly

3 ☐ Monthly

4 ☐ Rarely

5 ☐ Never

17. How frequently did you have *in-person* contact with other *students* in your program, such as in-person class, lab sections, group projects, study groups, etc.?

1 ☐ Daily

2 ☐ Weekly

3 ☐ Monthly

4 ☐ Rarely

5 ☐ Never

18. How frequently did you have *remote* contact with an *instructor* during your program, such as during instruction, over email, in chat rooms, on bulletin boards, etc.?

1 ☐ Daily

2 ☐ Weekly

3 ☐ Monthly

4 ☐ Rarely

5 ☐ Never

19. How frequently did you have *remote* contact with other *students* in your program, such as during instruction, over email, in chat rooms, on bulletin boards, etc.?

1 ☐ Daily

2 ☐ Weekly

3 ☐ Monthly

4 ☐ Rarely

5 ☐ Never

20. The next several questions are about the instruction you received during your training program. Please think about your overall program, including online or technology-based components and in-person class/lab time (if applicable).

Please indicate how much you agree or disagree with the following statements about your training program. If you were enrolled in more than one course during your program, please respond thinking about the course in which you spent the greatest number of hours.

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
a. The instruction I received during my training program was satisfactory	1 ☐	2 ☐	3 ☐	4 ☐
b. The instructor was available to answer questions	1 ☐	2 ☐	3 ☐	4 ☐
c. The instructor provided timely feedback on my progress	1 ☐	2 ☐	3 ☐	4 ☐
d. The frequency of student and instructor interaction was adequate	1 ☐	2 ☐	3 ☐	4 ☐
e. The frequency of student-to-student interaction was satisfactory	1 ☐	2 ☐	3 ☐	4 ☐
f. I felt like I was part of a learning community	1 ☐	2 ☐	3 ☐	4 ☐

21. The next several questions are about computer or technical matters related to your participation in the training program. Please indicate how much you agree or disagree with the following statements about your program.

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
a. The computer skills I brought with me were adequate for the training program	1 ☐	2 ☐	3 ☐	4 ☐
b. I had sufficient computer access to be able to fully participate in the program	1 ☐	2 ☐	3 ☐	4 ☐
c. If I needed it, my training program gave me adequate support for technical or computer problems	1 ☐	2 ☐	3 ☐	4 ☐
d. I encountered technical or computer difficulties that affected my learning	1 ☐	2 ☐	3 ☐	4 ☐

22. These next questions ask about the structure of your training program. Unless specified, please think about your overall program, including online or technology-based components as well as in-person class/lab time (if applicable).

Please indicate how much you agree or disagree with the following statements about your training program. If you were enrolled in more than one course during your program, please respond thinking about the course in which you spent the greatest number of hours.

		STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
a.	This program was a convenient way to participate in training	1 ☐	2 ☐	3 ☐	4 ☐
b.	I was satisfied with the pace of learning during my program	1 ☐	2 ☐	3 ☐	4 ☐
c.	The program provided flexibility with my life responsibilities (work, studies, travel, housework, and family life)	1 ☐	2 ☐	3 ☐	4 ☐
d.	It was easy to use the online portion of the program	1 ☐	2 ☐	3 ☐	4 ☐
e.	It took too much time to use the online or technology-based portion of the program	1 ☐	2 ☐	3 ☐	4 ☐
f.	It is more difficult to understand course content with online or technology-based learning than with traditional classroom instruction	1 ☐	2 ☐	3 ☐	4 ☐

23. What other services did you receive during training?

MARK ALL THAT APPLY

1 ☐ Assessment of computer skills
2 ☐ Assessment of vocational or career interests or abilities
3 ☐ Basic/remedial math, reading, or writing classes
4 ☐ Career counseling
5 ☐ Child care assistance
6 ☐ English as a Second Language (ESL) instruction
7 ☐ English/math skills assessment (For example: placement test, TABE test)
8 ☐ Financial assistance for test/licensing fees
9 ☐ In-kind financial assistance (For example: donated computers, internet connection)
10 ☐ Job placement assistance
11 ☐ Local job market information/counseling
12 ☐ Regular meetings with a case manager/counselor to discuss progress toward employment/ educational goals
13 ☐ Resume writing, interviewing skills, or appropriate workplace behavior training/classes
14 ☐ Transportation assistance
15 ☐ Tuition assistance
16 ☐ Other *(Please specify)*

_____

24. Did you complete the training program you were enrolled in?

1 ☐ Yes → **SKIP TO Q.26**

0 ☐ No

25. What are the reasons that you did not complete your training program?

MARK ALL THAT APPLY

1 ☐ Program is still in progress

2 ☐ Too busy

3 ☐ Found a new job

4 ☐ Computer or technical problems

5 ☐ Didn't get enough support from the instructor

6 ☐ Dropped behind in the coursework and couldn't catch up

7 ☐ Personal problems

8 ☐ Financial problems

9 ☐ Other *(Please specify)*

_____

26. Did you receive a degree, credential, or certificate as a result of your participation in the program?

1 ☐ Yes

0 ☐ No → **SKIP TO Q.29**

27. How many degrees, credentials, or certificates did you earn?

|___|___| NUMBER OF DEGREES, CREDENTIALS, OR CERTIFICATES EARNED

28. What degrees, credentials, or certificates did you receive as a result of completing your program?

MARK ALL THAT APPLY

1 ☐ High School diploma/GED

2 ☐ Occupational skills license (For example: LPN/LVN license, RN license, CDL)

3 ☐ Occupational skill certificate or credential (For example: community college certificate course, CNA certificate, ESL certificate, Microsoft Application certificate, IT certificate, etc.)

4 ☐ Associate's degree (AA/AS)

5 ☐ Bachelor's degree (BA/BS)

6 ☐ Master's degree, PhD, or graduate professional degree

7 ☐ Other *(Please specify)*

_____

These next questions ask about your satisfaction with your online or technology-based training program. Please think about your overall program, including online or technology-based components as well as in-person class/lab time (if applicable).

29. Please indicate how much you agree or disagree with the following statements about your training program.

		STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
a.	I learned new things from this program	1 ☐	2 ☐	3 ☐	4 ☐
b.	This program will help me in achieving my career goals	1 ☐	2 ☐	3 ☐	4 ☐
c.	This program has helped me gain new skills or enhance my existing skills	1 ☐	2 ☐	3 ☐	4 ☐
d.	I would consider taking online or technology-based courses in the future	1 ☐	2 ☐	3 ☐	4 ☐
e.	I prefer traditional classroom training to online or technology-based training	1 ☐	2 ☐	3 ☐	4 ☐
f.	I would recommend this program to others	1 ☐	2 ☐	3 ☐	4 ☐

30. Utilizing a scale of 1 to 10 where "1" means "Very Dissatisfied" and "10" means "Very Satisfied" what is your overall satisfaction with the services received through your training program?

Very Dissatisfied									Very Satisfied
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐

These last few questions ask about employment you might have had since your training program ended. Please think about all jobs you have/had, even if they were not a result of your participation in the training program. If you had more than one job, please answer the questions about the job in which you worked the most hours.

31. Since your training program ended, have you had any paid jobs?

A paid job means working for an employer, working in a family-run business, or self-employment; and can include full- or part-time employment.

1 ☐ Yes

0 ☐ No → **SKIP TO Q.37**

32. Since your program ended, do/did you work full-time or part-time at this job?

1 ☐ Full-time

2 ☐ Part-time

33. Since your program ended, approximately how many hours did/do you work in a typical week at your job?

|__|__| NUMBER OF HOURS WORKED IN A TYPICAL WEEK

34. Since your program ended, what was/is your wage or salary?

Please include overtime pay, tips, commissions, or bonuses before taxes or other deductions. Please provide an amount, in dollars and cents, and select a response to indicate if this is per hour, week, month, or year.

$ |__|__|__|,|__|__|__|.|__|__| PER
Dollars Cents

MARK ONE ONLY

1 ☐ Hour
2 ☐ Week
3 ☐ Every other week
4 ☐ Month
5 ☐ Year

35. Which of the following best describes the field in which you work/worked at this job?

1 ☐ Advanced Manufacturing
2 ☐ Computer Automation/Robotics
3 ☐ Construction
4 ☐ Direct Care for Adults
5 ☐ Energy Management
6 ☐ Geographic Information System (GIS)
7 ☐ Information Technology (IT)
8 ☐ Nursing
9 ☐ Transportation (For example: truck driving, mechanics)
10 ☐ Other *(Please specify)*

_____

36. Was/Is this the same job you had at the time you enrolled in the training program?

1 ☐ Yes
0 ☐ No

We would like to mail you a $15 Target gift card for your participation. This last question asks where the gift card should be sent.

37. What is your mailing address?

Please provide the street address or post office box number, state, and zip code.

_____
Street Address

_____ _____ _____
City State Zip Code

Thank you for your participation

APPENDIX D

GRANTEE PROFILES

Appendix D presents a brief profile of each grantee and the program(s) they sponsored with funds from the TBL initiative. Information for these profiles is taken from the following sources:

- Information on program design features and implementation was collected by Social Policy Research Associates (SPR) during visits to program sites in fall 2009 and spring 2010. Because not all grantees had fully implemented their programs at the time of SPR's site visits, information presented on program design could differ from how the program was eventually implemented for some grantees.
- Funding, estimated and actual enrollment counts, and TBL end dates were provided by ETA regional FPOs. Although actual enrollment numbers differ slightly from those grantees provided to Mathematica (see Appendix A), the dates provided by the FPOs are used in the profile descriptions to maintain a single source of reporting.
- Information on participant characteristics and outcomes was taken from the administrative data provided to Mathematica by the TBL grantees.

The appendix contains three data tables that capture some of the information provided in each profile. These tables allow the reader to quickly compare programs across several dimensions. Table D.1 presents summary information about each grantee and its programs. Table D.2 describes each grantee's participant characteristics, and Table D.3 describes program outcomes for participants. Much of the information in the tables is included in the grantee profiles that follow them. These profiles contain eight types of information about the programs. The program summary, contextual factors, experience with TBL, partnerships, recruitment and intake, and training delivery were obtained during the site visits by SPR in fall 2009 and spring 2010. They reflect the program as it was planned shortly after grants were awarded (in 2009). More recent information about the programs is not available. Information on participant characteristics and program outcomes was collected as part of this study and is more reflective of programs as they unfolded. However, characteristics and outcome data were not complete for all participants in the administrative dataset as discussed in Appendix A, and the numbers reported in the profiles may be different from the actual characteristics and outcomes of participants in each program. For example, the percentage of participants that complete the training might be less than the percentage that attain the credential because missing data meant the percentages were computed for different samples.

Table D.1. TBL Program Characteristics

Grantee	Location	Type of Organization	TBL Grant Funding	Projected. # of Participants	Final # of Participants	Percentage of Enrollment Achieved	Program Name	Program Duration	Industry/ Sector	Specific Focus	Type of Credential Offered	Program Operator	Instructional Mode	Population Served or Targeted	Percentage Enrolled at AJC (estimated)	AJC Co-enrolled Program	TBL Program End Date
Able-Disabled Advocacy (A-DA)	San Diego, California	Nonprofit	$584,600	80	102	128	CareerLink TBL program	10 months to 1 year	IT	IT training and certification	Certificate	Grantee	Blended	People with disabilities	75	Vocational Rehabilitation	February 1, 2012
College of Southern Nevada (CSN)	Las Vegas, Nevada	Community college	$420,727	90	474	527	Associate's Degree in Registered Nursing (ADN)	2 years	Health care	Registered nurse (RN) training	Associate's Degree	Grantee	Blended	Prior industry experience	NA	NA	February 1, 2012
							Nurse Refresher	2 semesters	Health care	RN license renewal	License renewal†						
Dillard University (Dillard)	New Orleans, Louisiana	University	$969,090	320	272	85	TBL Worker Training Program	4 weeks	Green construction	Green building and construction training (weatherization and hazardous materials)	Certificate	Deep South Center for Environmental Justice	Blended	Under- and unemployed, low-income, and dislocated workers	90 to 95	Workforce Investment Act (WIA) Adult or Dislocated Worker	February 1, 2012
Gulf Coast State College (GCSC)	Panama City, Florida	Community college	$499,583	150	150	100	Computer Integrated Manufacturing (CIM) Certificate of Graduation program	6 months to 1 year	Manufacturing	Computer integrated manufacturing	Associate's Degree; Certificate	Grantee	Blended	Incumbent workers	NA	NA	November 15, 2012
Greenville Technical College (GTC)	Greenville, South Carolina	Community college	$154,018	300	100	33	Nurse Return to Work through Technology Expansion program	4.5-6 months	Health care	Recertification of registered nurses (RNs) and licensed practical nurses (LPNs)	License renewal†	Grantee	Blended	Prior industry experience	NA	NA	February 1, 2012
Hillsborough Community College (HCC)	Winter Haven, Florida	Community college	$498,815	650	634	98	TBL Project in Manufacturing Essentials and TBL Project in Manufacturing Fundamentals	10 weeks	Manufacturing	Certified production technician training	Certificate	Polk Community College	Online	Under- and unemployed, dislocated, and incumbent workers	100	WIA	June 30, 2012
Illinois Department of Commerce and Economic Opportunity (IDCEO)	Chicago, Illinois	State workforce department	$500,000	500	934	187	Microsoft Digital Literacy and Microsoft Unlimited Potential Training Programs (MDL/MUP Training)	40 to 60 hours	Information technology	IT training	Certificate	TEC Services Consulting, Inc.	Blended	Under- and unemployed, low-income, and incumbent workers	20	WIA Adult or Dislocated Worker	December 31, 2012
Madisonville Community College (MCC)	Madisonville, Kentucky	Community college	$425,181	140	173	124	Integrated Nursing Program (INP)	2 years for RN, 1 year for LPN	Health care	RN and LPN training	Associate's Degree; license†	Grantee	Blended	Under- and unemployed, low-income, and dislocated workers	NA	NA	February 1, 2012
North Central Texas College (NCTC)	Gainesville, Texas	Community college	$538,947	132	132[a]	100	Online Licensed Vocational Nurse to Registered Nurse Transition program (LVN to RN Transition)	18 months	Health care	RN training	Associate's Degree	Grantee	Blended	Prior industry experience	NA	NA	July 31, 2012
Northern Virginia Community College (NOVA)	Annandale, Virginia	Community college	$492,458	355	113	32	Geospatial Career Pipeline Initiative Career Studies Certificate in GIS (GCPI)	2 years	Information technology	Geographic information systems (GIS)	Certificate	Grantee	Blended	No specific group	NA	NA	February 1, 2012
Orange County Workforce Investment	Orange County, California	WIB	$500,000	20	134	670	Virtual Hospital: English-as-a-Second-Language (ESL) for Nursing	13 weeks	Health care	English as a Second Language (ESL) training for	None	Coastline Community College	Blended	Incumbent workers	NA	NA	February 1, 2012

Grantee	Location	Type of Organization	TBL Grant Funding	Projected. # of Participants	Final # of Participants	Percentage of Enrollment Achieved	Program Name	Program Duration	Industry/ Sector	Specific Focus	Type of Credential Offered	Program Operator	Instructional Mode	Population Served or Targeted	Percentage Enrolled at AJC (estimated)	AJC Co-enrolled Program	TBL Program End Date
Board (OC WIB)							and Related Health Care Occupations			practicing nurses							
Ogden-Weber Applied Technology College (OWATC)	Ogden, Utah	Community college	$500,000	300	386	129	TBL IT Program	Up to 1 year	Information technology	IT training and certification	Certificate	Grantee	Blended	Incumbent workers	NA	NA	February 1, 2012
Reno Community Services Agency (Reno CSA)	Reno, Nevada	Nonprofit	$499,900	85	56	66	New Way Diesel Software Development project	12 weeks	Information technology; Green technology	Development and use of a knowledge base on clean diesel conversion	None	Education Design Group	Blended	Prior industry experience, under- and unemployed, and dislocated workers	80	WIA Adult or Dislocated Worker	March 31, 2012
Research Foundation of the State University of New York (RF SUNY)	Albany, New York	Nonprofit	$365,666	2,650	668	25	Public Health Nurse Ready (PHN Ready)	15.5 hours	Health care	Introductory public health nursing training	Certificate	University at Albany, SUNY	Online	Incumbent workers	NA	NA	February 1, 2012
Temple University Center for Social Policy and Community Development (Temple CSPCD)	Philadelphia, Pennsylvania	University	$695,569	126	174	138	TBL program in IT (CSPCD TBL)	15 to 18 weeks per course	Information technology	IT training and certification	Certificate	Grantee	Blended	Under- and unemployed workers	100	Wagner-Peyser	February 1, 2012
The Guidance Center (TGC)	Detroit, Michigan	Nonprofit	$500,000	1,675	9,012	538	Care and Training Supports (CATS)	30 minutes to 3 hours	Health care	Training for mental health direct care workers	Certificate	Grantee	Online	Incumbent workers	NA	NA	February 1, 2012
University of Colorado, Denver (UCD)	Denver, Colorado	University	$502,596	192	162	84	Global Energy Management (GEM)	18 months	Energy management	Energy management	Master's Degree	Grantee	Blended	Prior industry experience and incumbent workers	NA	NA	February 1, 2012
Western Governors University (WGU)	Salt Lake City, Utah	University	$500,000	1,000	222	22	Multi-State Approach to Preparing Registered Nurses (MAP-RN)	2 years	Health care	Prelicensure RN bachelor's degree	Bachelor's Degree	Grantee	Blended	Low-income workers	NA	NA	February 1, 2012
Wake Technical Community College (WTCC)	Raleigh, North Carolina	Community college	$383,686	230	971	422	Online Information Technology Certificate program	Up to 1 year	Information technology	IT training and certification	Certificate	Grantee	Online	Prior industry experience and people with disabilities	NA	NA	February 1, 2012
West Virginia University at Parkersburg (WVUP)	Parkersburg, West Virginia	University	$469,164	360	236	66	Expanded Access Program (EAP)	9 weeks	Health care	Certified nursing assistant (CNA) training	Certificate	Grantee	In-Person	Dislocated and incumbent workers	NA	NA	February 1, 2012
Total	**n.a.**	**n.a.**	**$10,000,000**	**9,355**	**15,105**	**161**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**

Source: Funding, number of participants served during the grant period, and program end date are based on reports from ETA regional FPOs; all other information from Dunham et al. (2011b).

Note: See the list of acronyms at the beginning of the report for definitions of all acronyms used.

[a] Number projected to be served by end of grant (as of August 16, 2012).

[†] The program provides a certification that the participant is certified to be licensed, but the participant must apply for the license from the relevant regulating body.

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Table D.2. Distribution of Participant Characteristics, by TBL Grantee (percentages unless otherwise indicated)

	Gender				Race/Ethnicity						Education at Enrollment										
	Male	Female	Other/ Refused	Average Age	Asian/Pacific Islander	Black	Native American	White	Hispanic	Other	No High School Diploma/ GED	High School Diploma/ GED	Some College	Associate's Degree	Bachelor's Degree	Graduate Degree	Employed at Enrollment	Low Income	Limited English Proficiency	Veteran	Has a Disability
A-DA	71.2	26.9	1.9	43.1	6.9	20.8	2.0	53.5	16.8	0.0	0.0	43.1	0.0	24.5	27.5	4.9	9.8	75.5	0.0	30.4	100.0
CSN	17.8	71.3	10.9	33.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dillard	83.6	16.4	0.0	34.7	0.0	97.5	0.0	0.8	1.7	0.0	7.2	92.8	0.0	0.0	0.0	0.0	34.2	19.0	0.0	13.0	1.3
GCSC	44.4	11.1	44.4	34.9	0.0	8.6	0.0	87.9	3.4	0.0	1.7	98.3	0.0	0.0	0.0	0.0	36.8	26.7	0.0	5.1	3.6
GTC	5.8	92.4	1.8	49.1	3.4	6.8	0.0	88.4	0.7	0.7	0.0	0.0	100.0	0.0	0.0	0.0	33.1	NA	0.0	6.2	3.4
HCC	85.9	13.3	0.8	40.6	2.1	12.2	0.2	70.1	15.3	0.2	4.1	45.8	18.4	13.7	12.4	5.6	94.1	NA	NA	15.9	0.0
IDCEO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100.0	NA	NA	NA
MCC	9.3	90.7	0.0	32.6	0.6	6.6	1.1	88.4	3.3	0.0	NA	NA	NA	NA	NA	NA	NA	53.6	0.0	5.7	2.5
NCTC	7.4	92.6	0.0	32.4	3.8	17.3	0.0	67.3	10.6	1.0	0.0	39.6	47.5	3.0	7.9	2.0	NA	23.8	6.9	NA	0.0
NOVA	40.0	60.0	0.0	35.7	26.3	5.3	0.0	63.2	5.3	0.0	0.0	15.0	0.0	5.0	70.0	10.0	85.0	8.3	0.0	10.0	25.0
OC-WIB	42.0	58.0	0.0	46.3	34.4	3.1	0.8	26.0	35.9	0.0	7.6	69.5	0.0	9.9	13.0	0.0	28.2	42.7	19.1	0.8	3.8
OWATC	77.9	14.7	7.4	32.6	4.1	3.1	0.0	83.8	7.2	1.7	2.1	70.5	27.4	0.0	0.0	0.0	40.4	NA	NA	9.2	13.2
Reno CSA	69.6	30.4	0.0	41.2	7.5	5.7	0.0	73.6	13.2	0.0	0.0	28.6	33.9	21.4	14.3	1.8	26.8	52.7	0.0	14.3	8.9
RF SUNY	3.7	95.9	0.3	46.6	2.5	9.1	1.3	87.1	0.0	0.0	0.0	1.6	1.5	23.8	51.0	22.1	NA	NA	NA	NA	NA
Temple CSPCD	26.4	61.1	12.5	37.4	0.8	95.2	0.0	2.4	1.6	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	0.0	0.8	0.0
TGC	12.5	46.0	41.5	38.9	0.0	81.0	0.3	16.7	0.9	1.1	0.0	85.3	0.0	9.0	4.7	1.0	100.0	NA	0.0	NA	NA
UCD	83.8	16.2	0.0	NA	1.1	10.2	1.1	72.7	14.8	0.0	0.0	0.0	0.0	0.0	84.4	15.6	95.4	NA	0.0	3.5	NA
WGU	22.1	76.6	1.4	36.4	21.1	32.0	1.1	30.3	14.9	0.6	0.0	36.5	0.0	24.7	24.1	14.7	78.4	NA	NA	5.9	0.0
WTCC	77.0	23.0	0.0	NA	5.2	15.2	0.0	79.6	0.0	0.0	NA	NA	NA	NA	NA	NA	59.5	NA	NA	NA	NA
WVUP	10.6	89.4	0.0	31.7	0.0	0.6	0.0	98.3	0.6	0.6	NA	NA	NA	NA	NA	NA	46.1	NA	NA	5.0	3.9

Source: Administrative data provided by grantees.

Note: Data are not weighted. See the list of acronyms at the beginning of the report for definitions of all acronyms used.

Table D.3. Participant Outcomes, by TBL Grantee

Grantee	Enrolled	Completed Training		Credential Attained[a]		Entered Unsubsidized Employment[b]		Entered Training-Related Employment[c]	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total	14,968	11,343	75.8	10,693	71.4	11,222	75.0	10,645	71.1
A-DA	104	93	89.4	102	98.1	51	49.0	38	36.5
CSN	321	122	38.0	113	35.2	NA	NA	NA	NA
Dillard	238	136	57.1	135	56.7	126	52.9	70	29.4
GCSC	108	5	4.6	2	1.9	25	23.1	15	13.9
GTC	223	174	78.0	171	76.7	76	34.1	61	27.4
HCC	637	556	87.3	509	79.9	7	1.1†	7	1.1†
IDCEO	540	540	100.0	NA	NA	NA	NA	NA	NA
MCC	183	64	35.0	64	35.0	63	34.4	63	34.4
NCTC	108	55	50.9	56	51.9	54	50.0	NA	NA
NOVA	20	16	80.0	16	80.0	20	100.0	NA	NA
OC-WIB	131	111	84.7	111	84.7	12	9.2†	4	3.1†
OWATC	326	138	42.3	136	41.7	126	38.7	66	20.2
Reno CSA	56	30	53.6	49	87.5	27	48.2	10	17.9
RF SUNY	884	231	26.1	232	26.2	881	99.7	645	73.0
Temple CSPCD	144	125	86.8	35	24.3	64	44.4	NA	NA
TGC	9,482	8,631	91.0	8,631	91.0	9,482	100.0	9,482	100.0
UCD	173	135	78.0	135	78.0	150	86.7	126	72.8
WGU	222	49	22.1†	49	22.1	NA	NA	NA	NA
WTCC[d]	888	NA	NA	26	2.9	NA	NA	NA	NA
WVUP	180	131	72.8	121	67.2	58	32.2	58	32.2

Source: Administrative data provided by grantees.

Note: Data are not weighted. See the list of acronyms at the beginning of the report for definitions of all acronyms used.

[a] Participants may obtain a credential without completing a training program (or complete a program and not obtain a credential), particularly if the credential is awarded by a third party, such as a licensing board.

[b] Includes participants who were employed when enrolling in their TBL program.

[c] Includes participants who were employed in a training-related job when enrolling in their TBL program.

[d] One participant was recorded as completing training in the analysis.

† Low outcomes can be attributed to high levels of missing data.

Grantee: Able-Disabled Advocacy (A-DA)
Program Operator: Grantee
Primary Service Area: San Diego County, California
TBL Initiative Funding: $584,600
Industry/Sector: Information Technology (IT)
Program Length: 10 months to 1 year
Credential Offered: Certificate
Mode of Instruction: Blended
American Job Center Enrollment and Program: 75 percent enrolled in Vocational Rehabilitation
Number Served: 102
Target Population: Individuals with disabilities
End Date: February 1, 2012

Program Summary: A-DA's CareerLink program was to use technology-based learning (TBL) to enable or enhance the employment of disabled people, while addressing the local area's IT workforce needs. The program allowed participants to receive up to six IT industry-recognized certifications.

Contextual Factors: The decision to focus on the IT sector was developed through labor market research and collaboration with the local workforce investment board (WIB), the San Diego Workforce Partnership. San Diego is a high-tech community and has a history of investing in technology. As high-growth industries moved into the area, there was an expectation that they would need IT professionals. By establishing the TBL, the grantee also hoped to lower the need to fill these positions with foreign IT workers through the H-1B visa process.

Experience with TBL: A-DA's primary experience had been in workforce development and case management for people with disabilities. Although A-DA had previously administered some small, short-term technology-focused training programs, CareerLink was the first to use online learning.

Partnerships: A-DA's primary partner was the San Diego Futures Foundation (SDFF). SDFF had extensive experience and connections to the IT industry and provided A-DA with guidance on curriculum design and the types of certifications to offer. SDFF was instrumental in program development and helped with employer outreach, equipment donation, and soft-skills training. The grantee also developed close partnerships with the San Diego Workforce Partnership and the California Department of Rehabilitation.

Recruitment and Intake: The program primarily recruited via its website and referrals from partners. To ensure participants were adequately prepared and dedicated to the program, CareerLink had a multistage intake/enrollment process that included a skills assessment and in-person interviews with program and staff.

Training Delivery: CareerLink's online component involved asynchronous interactive training modules,[39] one of which was to be completed per week. Online training was supplemented with biweekly in-person classroom sessions. The 10- or 12-week training component was followed by about 8 weeks of preparation for an industry certification exam. After certification, CareerLink students were placed in 16-week internships, which were followed by up to 10 weeks of job search and placement assistance from the program.

Participant Characteristics: Most participants were male (71.2 percent), with an average age of 43.1 years. About 53.5 percent were white, 20.8 percent were black, and 16.8 percent were Hispanic. All had completed high school, 24.5 percent had an associate's degree, 27.5 percent held a bachelor's degree, and nearly five percent had a graduate degree. All had a disability, and 75 percent were low income. About one-third (30.4 percent) were veterans. Only about 10 percent were employed at enrollment.

Program Outcomes: Almost 90 percent of participants completed the program, and nearly all (98.1 percent) attained a credential. About half (49.0 percent) entered unsubsidized employment, and 26.5 percent entered employment related to their training.

[39] Two categories exist for the time dimension of training delivery: synchronous and asynchronous. When instructors and learners meet at a specific time, either in person or via an online mechanism, the learning is termed *synchronous*. When learning need not occur at a specific time and is not linked to a specific learning event, it is called *asynchronous*.

Grantee: College of Southern Nevada (CSN)
Program Operator: Grantee
Primary Service Area: Las Vegas, Nevada, and surrounding areas
TBL Initiative Funding: $420,727
Industry/Sector: Health Care/Registered Nursing
Program Length: 2 years or 2 semesters
Credential Offered: Associate Degree, License renewal
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 474
Target Population: Prior industry experience
End Date: February 1, 2012

Program Summary: CSN endeavored to make significant upgrades to two of its nurse training programs to expand opportunities for the training of registered nurses (RNs) and to increase the number of graduates who could enter the nursing profession. For its Associate Degree in Nursing program (ADN), CSN converted eight courses to an online format. For its Nurse Refresher program, CSN increased the number of training participants through a strategic partnership with a key employer. In this partnership, CSN provided the equipment for a new lab, and the employer converted part of its preceptor (teaching assistant) training to an online format to increase the number of trained preceptors that could support the Nurse Refresher participants.

Contextual Factors: When the program began, Nevada was facing a critical shortage of nurses. In a study conducted by the U.S. Department of Health and Human Services, Nevada ranked last in the number of RNs per capita, and Clark County (southern Nevada) was designated a Health Professional Shortage Area/Medically Underserved Area. In spite of the high demand for nurses, CSN was only able to accept 42 percent of qualified nursing program applicants during the 2007–2008 academic year due to lack of faculty, classroom space, and clinical slots.

Experience with Technology-Based Learning (TBL): CSN had a large and extensive online college, with one ADN course offered online before the TBL grant.

Partnerships: CSN's primary partner was a major hospital system in Las Vegas, which provided preceptors and clinical spots to program participants.

Recruitment and Intake: Recruitment occurred primarily via the CSN website. Applicants were required to complete CSN's standard application and a limited entry program application. Admissions occurred twice a year, and applicants were ranked using a points system that included cumulative prerequisite grade point average, health care experience, completion of general education courses, and placement test results. Refresher students had to have previously held an RN license.

Training Delivery: The Nurse Refresher program and the ADN program both used a blended approach to learning. Lecture components included asynchronous online lectures, online discussion board assignments, and assigned readings. Lab and clinical components were all held in person, as were exams.

Participant Characteristics: Most participants were female (71.3 percent) and had an average age of 33.8. No other information was available.

Program Outcomes: Only 38.0 percent of participants completed training, and 35.2 percent attained a credential. Employment outcomes were not available.

Grantee: Dillard University (Dillard)

Program Operator: Dillard University's Deep South Center for Environmental Justice (Dillard DSCEJ)

Primary Service Areas: New Orleans, Louisiana; Atlanta and Savannah, Georgia; Detroit, Michigan

TBL Initiative Funding: $969,090

Industry/Sector: Construction

Program Length: 4 weeks

Credential Offered: Certificate

Mode of Instruction: Blended

American Job Center Enrollment and Program: 90 to 95 percent in WIA Adult or Dislocated Worker program

Number Served: 272

Target Population: Under- and unemployed, low-income, and dislocated workers

End Date: February 1, 2012

Program Summary: This multisite project provided green construction training for unemployed, underemployed, and dislocated workers in New Orleans, Atlanta, Savannah, and Detroit. The program served a variety of trainees, including entry-level job seekers and workers looking for new careers with better pay. It also served people with barriers to employment, including those with criminal backgrounds. Training generally took four weeks to complete and used online technology to broadcast synchronous lectures to multiple sites, where instructors were present to provide participants with hands-on training.

Contextual Factors: Dillard DSCEJ and its partners in Atlanta, Savannah, and Detroit have a history of providing environmental remediation and construction training programs. In these regions, demand for green construction and environmental remediation is high.

Experience with Technology-Based Learning (TBL): The partners had no prior experience using TBL methods.

Partnerships: The most important partnerships were with the three organizations that provided training in other locations: the Environmental Resource Center at Clark Atlanta University in Atlanta, Georgia; Citizens for Environmental Justice at Harambee House in Savannah, Georgia; and Detroiters Working for Environmental Justice in Detroit, Michigan. The program also had a partnership with a community-based organization that provided additional training in weatherization, as well as soft-skills training, on-the-job training, case management, and transportation. The project also partnered with several labor unions and organizations that contributed to curriculum development, including the United Steelworkers.

Recruitment and Intake: Each partner site drew on its own resources from existing pre-TBL training programs to recruit and enroll participants. In New Orleans, demand for project training was high, and there were waiting lists for the courses. Each participant at the New Orleans site had an individual development plan that began at intake and was updated periodically by the instructors.

Training Delivery: The program was made up of four weeklong courses on progressively more complex subjects: computer foundations, construction basics, weatherization, and hazardous materials. Course instructors provided online synchronous presentations, and technical trainers provided hands-on construction training at each of the four project classroom sites.

Participant Characteristics: Most participants were male (83.6 percent), and the average age was 34.7. Nearly all (97.5 percent) were black and had a high school diploma or general educational development (GED) credential (92.8 percent). About one-third (34.2 percent) were employed at enrollment, 19.0 percent were low income, and 13.0 percent were veterans. None had limited English proficiency, and only 1.3 percent had a disability.

Program Outcomes: About half of participants completed training, attained a credential, and entered unsubsidized employment (57.1, 56.7, and 52.9 percent, respectively). Only about 29.4 percent entered training-related employment.

Grantee: Gulf Coast State College (GCSC)
Program Operator: Grantee
Primary Service Area: Panama City, Florida (Bay, Franklin, and Gulf Counties)
TBL Initiative Funding: $499,583
Industry/Sector: Advanced Manufacturing
Program Length: 6 months to 1 year
Credential Offered: Associate's Degree, Certificate
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 150
Target Population: Incumbent workers
End Date: November 15, 2012

Program Summary: GCSC's Computer Integrated Manufacturing (CIM) program developed a new set of courses to meet the computer automation and robotics training needs of employees in the manufacturing and control industries. The CIM project was designed to provide primarily incumbent workers with a blend of online and hands-on training through the use of custom-designed Mobile Laboratory Kits that could be shipped to employer sites and combined with DVD presentations and online course content delivery.

Contextual Factors: GCSC's goal was to provide a steady stream of well-trained individuals for Florida's manufacturing industry, which contains 400,000 people in more than 16,500 manufacturing companies, producing both durable and consumable goods. With much of manufacturing affected by computer automation and robotics, GCSC felt there would be high demand for an online/on-site training curriculum.

Experience with Technology-Based Learning (TBL): At the time of the site visit, GCSC had 12 years of experience with online learning and more than 500 online course offerings. GCSC's director of e-learning described the faculty as "very computer literate," adding that GCSC is always trying to expand learning opportunities in the region through use of technology.

Partnerships: GCSC relied heavily on its advisory committee, made up of representatives from 12 local employers, to ensure the computer automation and robotics technology courses met the needs of Florida employers. Two employers were intimately involved in shaping the CIM program's curriculum. In addition, the Regional Workforce Board agreed to market the skills-upgrading training to employers and to provide other workforce services (for example, placement, supportive services) to students who completed training.

Recruitment and Intake: The courses were publicized on GCSC's website. GCSC also planned to conduct meetings with employers to recruit them for project participation.

Training Delivery: CIM training was designed to be asynchronous. All training materials were contained in custom-designed Mobile Laboratory Kits that included the latest in automation and robotics hardware and software and a laptop. Lectures, PowerPoint presentations, and videos with laboratory demonstrations were available online or the CD-ROMs in the kits. Video help files were available for extra support on lab assignments. Employers wanting to provide CIM training to employees could lease kits for up to 16 weeks.

Participant Characteristics: Females enrollment was one-fourth that of males (11.1 versus 44.4 percent) for those with information on gender (55.6 percent). Average age was 34.9 years. Most (87.9 percent) were white and had a high school diploma or general educational development (GED) credential (98.3 percent). Slightly more than one-third (36.8 percent) were employed when they started the program. About one-quarter (26.7 percent) were low income, 5.1 percent were veterans, and 3.6 percent had a disability. None had limited English proficiency.

Program Outcomes: Only 4.6 percent completed the training, with only 1.9 percent attaining a credential. Less than one-quarter (23.1 percent) entered unsubsidized employment, and only 13.9 percent entered training-related employment.[40]

[40] These relatively low percentages could arise because only 50 percent of participants had completed data.

Grantee: Greenville Technical College (GTC)
Program Operator: Grantee
Primary Service Area: South Carolina
TBL Initiative Funding: $154,018
Industry/Sector: Health Care/Registered Nursing
Program Length: 4.5 to 6 months
Credential Offered: License renewal
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 100
Target Population: Prior industry experience
End Date: February 1, 2012

Program Summary: GTC's Nurse Return to Work through Technology Expansion (Nurse Return to Work) program offered courses that allowed registered nurses (RNs) and licensed practical nurses (LPNs) to have their licenses reinstated.

Contextual Factors: South Carolina ranked 42nd in the ratio of nurses to general population and nationally had one of the highest rates for cancer, heart disease and stroke, and diabetes. However, nursing schools in the state were not graduating enough nurses. Because nurses who were previously licensed need only to complete a relatively short retraining to reactivate their licenses, a refresher training represented a speedy method to supply additional nurses to health care employers.

Experience with Technology-Based Learning (TBL)**:** The Nurse Return to Work program began in 2000, several years before GTC received its TBL grant. The college's nursing outreach program decided to use the college's existing radiation technician program as a model.

Partnerships: The Nurse Return to Work program's primary partner was Florence-Darlington Technical College, which provided the in-person lab skills component for nurses located closer to it than to GTC. A number of local health care employers provided students with required externships that often lead to jobs.

Recruitment and Intake: The course was publicized on GTC's website and on the websites of the South Carolina Board of Nursing and those of 16 other state boards of nursing. Nurses could enroll by telephone, via the internet, or in person. To be eligible, they had to have been trained at an accredited nursing program and had to have held a U.S. nursing license.

Training Delivery: The training program lasted from four and a half to six months, and included three months of online study, a 10-day skills lab, an 84-hour externship, and assistance with licensing. Online materials included lectures, videos, and written materials. The instructor also regularly posted questions on a discussion board for the class to answer and occasionally conducted "live classroom" meetings, archived for later viewing. Exams were also completed online; they were generated randomly from a test question bank and graded automatically.

Participant Characteristics: Most (92.4 percent) of participants were females and white (88.4 percent). The average age was 49.1. All had some college. About one-third (33.1 percent) were employed when they started. About 6.2 percent were veterans, and 3.4 percent had a disability. None had limited English proficiency. No information is available on low-income status.

Program Outcomes: More than three-quarters of participants completed the training (78.0 percent) and attained a credential (76.7 percent), but only 34.1 percent entered unsubsidized employment, and only 27.4 percent entered training-related employment.

Grantee: Hillsborough Community College, Winter Haven, Florida (HCC)

Program Operator: Polk Community College, The Employ Florida Banner Center for Advanced Manufacturing (Banner Center)

Primary Service Area: Florida

TBL Initiative Funding: $498,815

Industry/Sector: Manufacturing

Program Length: 10 weeks

Credential Offered: Certificate

Mode of Instruction: Online

American Job Center Enrollment and Program: 100 percent in WIA

Number Served: 634

Target Population: Under- and unemployed, dislocated, and incumbent workers

End Date: June 30, 2012

Program Summary: HCC, in collaboration with the Banner Center, planned to disseminate the Banner Center's "Manufacturing Essentials" course for incumbent production workers and its "Manufacturing Fundamentals" course for entry-level production workers through technology-based learning (TBL). *For the first cohort of trainees*, which included both incumbent and entry-level workers, these two curricula were combined into a single, online "Manufacturing Essentials" training program. The training program was aimed at preparing workers for the Manufacturing Skill Standards Council's Certified Production Technician certification.

Contextual Factors: Manufacturing is an important sector in Florida's economy, and the state identified advanced manufacturing as a priority area for public workforce investment. More than 80 percent of Florida manufacturers surveyed by the Banner Center indicated that worker training that resulted in industry-recognized certifications was important to them.

Experience with TBL: Using TBL for Manufacturing Essentials training courses was a new endeavor. A project manager with experience in TBL was hired, and most of the grant was devoted to the creation and implementation of a learning management system (LMS) for the program.

Partnerships: The Banner Center was created and sustained with Workforce Investment Act (WIA) Governors' Discretionary Funds. LabVolt, which helped the project develop the LMS system, learning objects, and simulated hands-on exercises, was a major program partner. Different employers also played significant roles as members of the Banner Center's advisory council. Colleges (such as the State College of Florida in Sarasota) provided networked sites that enabled participants to engage in the program.

Recruitment and Intake: The grantee targeted dislocated or underemployed workers, and incumbent workers. Most participants were referred by employer partners or through recruitment at different colleges. There were no formal eligibility requirements for participation.

Training Delivery: The TBL version of the Manufacturing Essentials course spanned 10 weeks. Lectures were broadcast using WebEx or Microsoft Meeting software to different locations twice a week in four-hour evening sessions. Participants were able to ask the instructor questions during the lecture using a chat function. Lectures were recorded so that participants could review them asynchronously if necessary.

Participant Characteristics: Most participants were male (85.9 percent), and the average age was 40.6. About 70.1 percent were white, 15.3 percent were Hispanic, and 12.2 percent were black. Almost half (45.8 percent) had a high school diploma or general educational development (GED) credential, and 18 percent had a bachelor's degree or better. Nearly all (94.1 percent) were employed when starting the program. Almost 16 percent were veterans, and none had a disability. No information is available on low-income status or limited English proficiency.

Program Outcomes: Most participants (87.3 percent) completed training and attained a certificate (79.9 percent), but few (1.1 percent) entered unsubsidized employment.

Grantee: Illinois Department of Commerce and Economic Opportunity (IDCEO)

Program Operator: TEC Services Consulting, Inc. (TEC)
Primary Service Area: Chicago, Illinois
TBL Initiative Funding: $500,000
Industry/Sector: Information Technology (IT)
Program Length: 40 to 60 hours
Credential Offered: Certificate
Mode of Instruction: Blended
American Job Center Enrollment and Program: 20 percent in WIA Adult or Dislocated Worker program
Number Served: 934
Target Population: Under- and unemployed, low-income, and incumbent workers
End Date: December 31, 2012

Program Summary: IDCEO'S Microsoft Digital Literacy and Microsoft Unlimited Potential Training Programs (MDL/MUP Training) provided IT training to unemployed and incumbent workers in the Chicago area. These TBL programs were a pilot for IDCEO, which wanted to establish a platform/model of online training that could be expanded across the state and across many industries.

Contextual Factors: The decision to use the Technology-Based Learning (TBL) grant for IT training was a direct result of a report released by the state-funded Illinois IT Task Force. Two years before the TBL grant solicitation, the state had identified IT as a critical industry. The decision to target incumbent workers in addition to unemployed workers resulted from discussions with Chicago-area employers.

Experience with TBL: At the time of the site visits, TEC Services had been designing and administering IT-based training programs for 15 years and had provided online trainings since 2002.

Partnerships: The MDL/MUP program involved many critical partnerships. The Chicago Workforce Investment Council provided TEC with recruitment access to four American Job Centers (AJC). The TBL program also worked closely with the Chicago Housing Authority, which granted TEC access to its residents for program recruitment. The TBL program also developed close partnerships with the Chicago Chamber of Commerce and more than 100 employers.

Recruitment and Intake: Unemployed workers were primarily recruited through four AJCs in Chicago and through housing facilities operated by the Chicago Housing Authority. At those sites, TEC staff members provided orientations and intake sessions. Incumbent worker participants were recruited directly through employers that were familiar with, and had used TEC's services for specific online training programs.

Training Delivery: The MDL/MUP training program was an asynchronous, online, open-entry/open-exit training program. Although there were no set completion dates, TBL participants were expected to complete the program in 40 to 60 contact hours. Although it was not officially required, all TBL participants were encouraged to participate in a practical application component, which allowed participants to reinforce the lessons learned online through hands-on activities designed to simulate "real-world" scenarios. These practical application activities were facilitated by TEC's business services department or employer partners.

Participant Characteristics: The only information available on participants is low income. All participants were low income.

Program Outcomes: The only information available on outcomes is completion of training. All participants completed training.

Grantee: Madisonville Community College (MCC)
Program Operator: Grantee
Primary Service Area: Western Kentucky and contiguous regions of Illinois, Indiana, and Tennessee
TBL Initiative Funding: $425,181
Industry/Sector: Health Care/Licensed Practical Nursing (LPN) and Registered Nursing (RN)
Program Length: 2 years for RN, 1 year for LPN
Credential Offered: Associate's Degree, Certificate to be licensed (participant must apply for license)
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 173
Target Population: Under- and unemployed, low-income, and dislocated workers
End Date: February 1, 2012

Program Summary: Under the TBL (Technology-Based Learning) Initiative, MCC converted its existing curriculum for the Integrated Nursing Program (INP) to an online format. The program provided a seamless educational curriculum in nursing with two exit points, allowing students to choose a career as an LPN or RN. INP aimed to increase the number of LPN and RN graduates in four states (Kentucky, Indiana, Illinois, and Tennessee).

Contextual Factors: The demand for all types of nurses, particularly at the RN level, was acute in MCC's service areas. This demand was expected to increase due to rising vacancy rates in nursing positions due to an aging nurse workforce. At the same time, the demand for health care services is also expected to increase with the aging of the baby boomer generation.

Experience with TBL: MCC was a member of the Kentucky Virtual University and provided general education courses online. In 2006, MCC converted its Surgical Assistant (SA) program, which enrolled students throughout Kentucky and nationwide, to a 100 percent online format. MCC modeled the design and delivery of INP after the SA program.

Partnerships: MCC partnered with more than 60 regional hospitals to provide clinical sites, preceptors (teaching assistants), and job opportunities for program participants. MCC also partnered with Murray State University to develop a "Fast Track" Bachelor of Science in Nursing (BSN) Completion program. Through its partnership with the West Kentucky Workforce Investment Board, some low-income and dislocated-worker participants in INP received tuition assistance and wraparound services (such as case management and transportation assistance).

Recruitment and Intake: Program recruitment occurred primarily via MCC's website and preadmission informational sessions, which MCC offered at least twice per semester. Program applicants needed to complete MCC's standard application and a program-specific application. Applicants were ranked for admission based on relevant work experience, grade point average for required courses, and nursing placement exam scores.

Training Delivery: Each INP course contained two to four modules, each of which covered specific topics and built on the module that preceded it. INP used a blended learning model for course delivery. Participants accessed prerecorded lectures online and were required to respond to online discussion board questions. In-person components included an intensive, three-day "boot camp" orientation and overview, labs and clinicals, and proctored exams at the conclusion of each module and at the end of each course.

Participant Characteristics: Most participants (90.7 percent) were female and white (88.4 percent). The average age was 32. More than half (53.6 percent) were low income, 5.7 percent were veterans, and 2.5 percent had a disability. None had limited English proficiency. No information is available on participants' education or employment before starting the TBL program.

Program Outcomes: Slightly more than one-third of the participants completed both the Associate's degree and the license and attained a credential (35.0 percent) and entered unsubsidized employment (34.4 percent). No information is available on whether the employment was related to the training.

Grantee: North Central Texas College (NCTC)
Program Operator: Grantee
Primary Service Area: Gainesville, Texas, and surrounding areas
TBL Initiative Funding: $538,947
Industry/Sector: Health Care/Licensed Vocational Nursing (LVN) and Registered Nursing (RN)
Program Length: 18 months
Credential Offered: Associate Degree
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 132
Target Population: Prior industry experience
End Date: July 31, 2012

Program Summary: NCTC used the Technology-Based Learning (TBL) grant resources to convert its traditional LVN to RN Transition Program courses into online courses. The TBL grant also enabled NCTC to boost its simulation capacities through the purchase of more simulation resources and the development of more simulation classes.

Contextual Factors: NCTC chose to focus on the nursing field because it is a high-demand, high-growth field in Texas. One study conducted by the Texas Center for Nursing Workforce Studies noted that, in 2010, Texas needed approximately 161,000 working nurses to meet demand. The counties in NCTC's service area (Cooke, Denton, and Montague Counties) were noted as having a particularly strong need for RNs.

Experience with TBL: At the time of the site visit, NCTC had a long history of using TBL methods, as it had offered online courses since 2000. All of NCTC's core classes were offered online, and, at the time of the site visit, 28 percent of NCTC's students had enrolled in at least one online course. All of NCTC's Associate Degree in Nursing (AND) and LVN courses were already offered online when the grant was awarded.

Partnerships: NCTC's primary partners were the region's hospitals and other health care facilities. They participated in defining program strategy and goals, designing training approaches and curricula, and providing clinical sites. NCTC also worked with the local Workforce Investment Boards (WIBs) in identifying training gaps and employer demands in the region.

Recruitment and Intake: NCTC's Health Science Department had a full-time recruiter on staff who marketed the program at community events and by meeting with high school students and their college counselors. LVNs interested in enrolling were required to go through the same application process as students applying for the traditional program and needed to fulfill program course prerequisites before enrollment.

Training Delivery: The program lasted four semesters. Students completed five online courses and three clinical courses that took place in surrounding hospitals and at the simulation lab at NCTC. The online courses were asynchronous with a semimanaged pace and typically involved participants reviewing a lecture and accompanying PowerPoint slides, completing a reading assignment, and taking a quiz to test retention of course material.

Participant Characteristics: Most (92.6 percent) participants were female. Their average age was 32.4. About two-thirds (67.3 percent) were white, 17.3 percent were black, and 10.6 percent were Hispanic. All had at least a high school diploma, with 47.5 percent having some college and 9.9 percent having a bachelor's degree or higher. About one-fourth (23.8 percent) were low income, and 6.9 percent had limited English proficiency. None had a disability. No information was available on employment at the time the program started or veteran status.

Program Outcomes: About half of the participants completed the program (50.9 percent), attained a credential (51.9 percent), and entered unsubsidized employment (50.0 percent). No information was available on whether the employment was related to the training.

Grantee: Northern Virginia Community College (NOVA)
Program Operator: Grantee
Primary Service Area: Northern Virginia
TBL Initiative Funding: $492,458
Industry/Sector: Information Technology (IT)/Geographic Information Systems (GIS)
Program Length: 2 years
Credential Offered: Certificate
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 113
Target Population: Not available
End Date: February 1, 2012

Program Summary: NOVA's Geospatial Career Pipeline Initiative (GCPI) was designed to increase the number of students earning a GIS Career Studies Certificate, thereby expanding the pipeline of workers with GIS skills. GCPI was a comprehensive program that included both coursework and internship opportunities designed to (1) give students entry-level GIS skills, (2) provide students who already have a master's or bachelor's degree with the skills necessary to increase their competitiveness in the profession or switch careers, and (3) give students the ability to gain an associate's degree or transfer to a four-year institution.

Contextual Factors: When the grant was awarded, GIS was ranked third on the President's High-Growth Jobs Initiative. These jobs were particularly in demand in the Northern Virginia/Washington, DC metropolitan area, with many government-related positions requiring both GIS skills and U.S. citizenship for security clearance and a heavy reliance on foreign GIS professionals with H-1B visas.

Experience with Technology-Based Learning (TBL): NOVA had considerable experience with online learning, as this was a major component of its educational structure. The college had a virtual campus called the Extended Learning Institute, which had been in existence since 1975 and offered online courses, telecourses, and blended online courses. The first GIS class had been online since 2007, and TBL grant funds provided the resources to put other GIS courses online. GCPI staff felt that GIS courses were particularly well-suited to online learning, due to their inherent focus on computer technology.

Partnerships: GCPI partnered with three local high schools, local Workforce Investment Boards (WIBs), and employers. The high schools provided computers, textbooks, and materials, while also offering GIS courses on their campuses and allowing students to co-enroll in some GCPI courses. The program also partnered with a number of employers, including three that provided paid internships to program participants. Finally, the two local WIBs had informal agreements with GCPI to refer qualified candidates to the program.

Recruitment and Intake: GCPI recruited students through open houses, information sessions, college fairs, and media advertisements. The program also held a GIS career day at a partner campus, where both current and potential participants could learn about educational and professional opportunities in the field.

Training Delivery: All but one of the courses required for GIS certification (other than the internship) were online. None of the online courses had any in-person requirements, and all course material was available asynchronously. To enable participants to access required and computer memory-intensive GIS software from their home computers, GCPI installed desktop virtualization on a server at NOVA.

Participant Characteristics: Participants were 60.0 female, and had an average age of 35.7. About 63.2 percent were white, and 27.3 percent were Asian or Pacific Islander. Most had a bachelor's degree (70.0 percent), and 10.0 percent had a graduate degree. Most (85.0 percent) were employed at enrollment, and relatively few (8.3 percent) were low income. About 10.0 percent were veterans, and 25.0 percent were disabled. None had limited English proficiency.

Program Outcomes: Most (80.0 percent) completed the program and attained a credential. All entered unsubsidized employment. No information is available on whether they entered training-related employment.

Grantee: Orange County Workforce Investment Board (OC WIB)
Program Operator: Coastline Community College (Coastline)
Primary Service Area: Orange County, California
TBL Initiative Funding: $500,000
Industry/Sector: Health Care/Nursing
Program Length: 13 weeks
Credential Offered: None
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 134
Target Population: Incumbent workers
End Date: February 1, 2012

Program Summary: English-as-a-second-language (ESL) Virtual Hospital, a program developed through a partnership between OC WIB and Coastline, was designed to improve the communications skills of nurses for whom English was a second language. The program used virtual reality software and took place within the Second Life virtual world. It was designed to provide participants with opportunities to practice English-language comprehension and execution skills by engaging in scenarios that reflected "real-life" medical situations, using idioms typically used among medical staff members and between medical staff members and their patients and their patients' families.

Contextual Factors: With widespread nursing shortages, many Orange County hospitals were employing nurses from foreign countries. Nurses were highly skilled in their abilities to execute medical procedures, concerns arose about their abilities to communicate effectively with other medical staff members, patients and patients' families, in part, because of challenges with English language facility but also because of the use of idioms typically used by medical staff members in American hospitals.

Experience with Technology-Based Learning (TBL): Coastline was a leader in distance learning when the grant was awarded. It offered a wide array of online and "telecourses" (television-based curriculum) and had won awards for its work.

Partnerships: OC WIB had a strong relationship with Coastline before the TBL grant, as Coastline managed the WIB's American Job Centers. Two local hospitals served as employer partners to the project. OC WIB also reconvened a health care collaborative of several regional hospitals as advisers to the project.

Recruitment and Intake: Coastline and OC WIB sought support from two local hospitals to recruit participants from their pools of nurses. To participate, nurses needed to be actively employed and demonstrate a need and desire to improve their English language skills.

Training Delivery: Virtual Hospital was designed to be a blended program that spanned 13 weeks, with approximately two lessons per week. The first five lessons were designed to be in-person courses, where nurse participants would meet with an ESL instructor to go over the fundamentals of language and pronunciation of American English. Most lessons after that would take place in the Virtual Hospital. Each participant was expected to develop an avatar and use it to practice communicating with patients, patient families, and other medical staff members in scenarios developed by nursing subject matter experts. Participants would also be able to meet with each other and their instructor in the Virtual Hospital.

Participant Characteristics: About 58.0 percent of participants were female. They had an average age of 34.4. Participants were about 35.9 percent Hispanic, 34.4 percent black, and 26.0 percent white. About 69.5 percent had a high school diploma or general educational development (GED) credential, and 13.0 percent had a bachelor's degree. About 28.2 percent were employed at enrollment, and 42.7 percent were low income. Nearly one-fifth (19.1 percent) had limited English proficiency, 0.8 percent were veterans, and 3.8 percent had a disability.

Program Outcomes: Most participants completed the program and attained the certificate of completion (84.7 percent). Only 9.2 percent entered unsubsidized employment, and only 3.1 percent entered training-related employment.

Grantee: Ogden-Weber Applied Technical College (OWATC)
Program Operator: Grantee
Primary Service Area: Weber County, Utah
TBL Initiative Funding: 500,000
Industry/Sector: Information Technology (IT)
Program Length: Up to 1 year
Credential Offered: Certificate
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 386
Target Population: Incumbent workers
End Date: February 1, 2012

Program Summary: The Technology-Based Learning (TBL) grant supported the IT Certification program at OWATC, which provided training for students seeking industry-recognized credentials in a range of IT arenas. Most funds were used to provide financial aid to IT students, and a smaller portion was used for infrastructure improvements. The program's goals were to support its student population, many of whom were unable to afford continued education, and to increase the quality and quantity of the local IT workforce.

Contextual Factors: The IT sector was identified as one of four high-growth industries in Utah. Increasing the IT workforce benefitted IT companies, as well as manufacturing and aerospace industries, both of which were touted as the "main economic drivers" in the county. Local IT employers expressed challenges in recruiting workers, and they relied on OWATC to help build a well-trained local IT workforce.

Experience with TBL: The IT certification program had been in place for several years before the TBL grant. However, OWATC offered only four online courses and had been purposefully slow about increasing online course offerings. It prided itself on its "hands-on" approach; most students preferred in-person courses, and local employers perceived in-person trainings to be of higher quality.

Partnerships: Partners included organizations that provided computers for student use (such as the local library system) and those that served the program's target populations (such as the Custom Fit Program, which pays for 35 percent of training costs for employees in for-profit companies, and community and faith-based organizations that serve unemployed populations). The primary roles of these latter organizations were to market the IT program and refer participants.

Recruitment and Intake: OWATC relied primarily on its program partners for recruitment. The only requirement for admission was that students pass a computer literacy test to ensure that they had the baseline math and computer skills necessary to begin the program. Students who did not pass the literacy test had to retake the exam after they completed courses designed to help them fill their knowledge gaps.

Training Delivery: The open entry/open exit program used a blended approach to learning. Courses were asynchronous, but participants did most work in the OWATC computer lab, in the presence of an instructor. Participants were provided with guidelines for how long a course should take to complete and could work at their own pace, but within reasonable limits. Most courses involved participants reading from a textbook and then completing activities and taking tests via the Learning Management System (LMS). The difference for online courses was that assignments and tests could be completed online as opposed to in the lab. Hands-on training opportunities (such as computer or network building) supplemented textbook learning.

Participant Characteristics: Most participants were male (at least 77.9 percent) and white (83.8 percent). They had an average age of 32.6. About 70.5 percent had a high school diploma or general educational development (GED) credential, and 27.4 percent had an associate's degree. About 40.4 were employed at enrollment, 9.2 percent were veterans, and 13.2 percent had a disability. Information was not available on low-income status or limited English proficiency.

Program Outcomes: Less than one-half of participants completed the program (42.3 percent), attained a credential (41.7 percent), or entered unsubsidized employment (38.7 percent). About 20.1 percent entered training-related employment.

Grantee: Reno Community Services Agency (Reno CSA)
Program Operator: Education Design Group (EDG)
Primary Service Area: Washoe County, Nevada
TBL Initiative Funding: $499,900
Industry/Sector: Information Technology (IT)/Green Technology
Program Length: 12 weeks
Credential Offered: None
Mode of Instruction: Blended
American Job Center Enrollment and Program: 80 percent in Workforce Investment Act (WIA) Adult or Dislocated Worker programs
Number Served: 56
Target Population: Prior industry experience, under- and unemployed and dislocated workers
End Date: March 31, 2012

Program Summary: Reno CSA's New Way Diesel project had two main components: (1) developing an "e-Resource Center" on clean diesel; and (2) piloting the center, with participants taking courses in diesel mechanics or related fields. Participants who worked on developing the e-Resource Center learned skills in research, knowledge management, and web design and obtained a greater knowledge of green technologies. Participants in diesel mechanics training programs were expected to use the e-Resource Center as a primary curriculum source and provide feedback for its continual improvement.

Contextual Factors: Reno CSA originally targeted the transit industry (specifically, trucking) but found the program did not fit grant parameters because it did not employ enough workers with H-1B visas. The New Way Diesel project was designed to meet these parameters by building skills in knowledge management and web design in an industry with a high number of employees with H-1B visas (IT), while focusing on an area (clean diesel conversion) that benefits the transit industry and supports local efforts to make Washoe County a center for the growing renewable energy field.

Experience with Technology-Based Learning (TBL): EDG's staff members had experience designing TBL curricula and collaborated with Reno CSA and SQI-Inc., a company with experience in knowledge management and open source technology, in the design and implementation of the New Way Diesel project.

Partnerships: Reno CSA decided to develop partnerships with community colleges that offered training programs that might benefit from the use of the e-Resource Center. Its intention was for the community college partners to pilot the e-Resource Center in their diesel mechanics courses, assess its effectiveness as a curriculum tool, and provide feedback to the participants working on its development.

Recruitment and Intake: The first cohort of participants was recruited almost entirely from Reno CSA's client database, although future recruitment efforts would include local high schools and community colleges.

Training Delivery: Participants developing the e-Resource Center underwent a 12-week course in knowledge management, knowledge base development, and Web design. They were required to attend one weekly lecture, held at EDG's offices. Lectures were synchronous and broadcasted online using Skype. Participants were expected to spend 20 hours per week doing coursework. Course assignments varied weekly, and all materials were available online. At the end of the course, each participant was expected to develop a web page that demonstrated contributions to the development of the e-Resource Center.

Participant Characteristics: Most participants were male (69.4 percent). They had an average age of 41.2. Most were white (73.6 percent), although 13.2 percent were Hispanic. Most had at least some college (71.4 percent), with 21.4 percent having an associate's degree, 14.3 percent having a bachelor's degree, and 1.8 percent having a graduate degree. About one-quarter (26.8 percent) were employed at the time of enrollment. A majority (52.7 percent) were low income. About 14.3 percent were veterans, and 8.9 percent had a disability. None had limited English proficiency.

Program Outcomes: More than half (53.7 percent) completed the program, and 87.5 percent attained a certificate of completion. Only about 48.2 percent entered unsubsidized employment, and 17.9 percent entered training-related employment.

Grantee: Research Foundation of the State University of New York (RF SUNY)

Program Operator: University at Albany, State University of New York, Center for Public Health Continuing Education (CPHCE)

Primary Service Area: New York State

TBL Initiative Funding: $365,666

Industry/Sector: Health Care/Public Health Nursing

Program Length: 15.5 hours

Credential Offered: Certificate

Mode of Instruction: Online

American Job Center Enrollment and Program: Not available

Number Served: 668

Target Population: Incumbent workers

End Date: February 1, 2012

Program Summary: The Public Health Nursing Ready certificate program (PHN Ready) was designed to help nurses acquire public health nursing competencies and to meet the requirements of the New York State sanitary code. PHN Ready targeted newly hired New York public health nurses who lacked formal training in public health.

Contextual Factors: Many studies projected a shortage of public health nurses through 2014. Moreover, most nurses new to the public health field were not prepared for public health practice at the required level.

Experience with Technology-Based Learning (TBL): Since 1999, CPHCE had developed several online courses and webcasts.

Partnerships: One of CPHCE's key partners was the New York State Department of Health, which provided the Learning Management System (LMS) for the PHN Ready certificate program. Other partners included the New York State Nurses Association, the New York New Jersey Public Health Training Center, and the New York State Association of County Health Officials.

Recruitment and Intake: CPHCE planned to use its electronic registration and marketing system (Informz) for recruitment. CPHCE was also relying on its program partners to assist with recruitment and referrals. There was no application/admissions process for the PHN Ready certificate program.

Training Delivery: Content for the PHN Ready certificate program was provided by three third-party providers and consisted of archived webcasts and online, self-paced courses, many of which provided continuing education credits. Each hour-long archived webcast was an online version of a news broadcast in which experts in the public health field discussed critical topics of relevance to public health nursing. Each online course included interactive scenarios and online quizzes to test content retention. All course activities were asynchronous.

Participant Characteristics: Most participants (95.9 percent) were female and white (87.1 percent). Their average age was 46.6 percent. Nearly three-quarters (73.1 percent) had at least a bachelor's degree. No participant was employed at program enrollment, as new hires were targeted by the program. Information is not available on low-income status, limited English proficiency, veteran or disability status.

Program Outcomes: Only about one-quarter of participants completed the program (26.1 percent) or attained a credential (26.2 percent). Nearly all (99.7 percent) entered unsubsidized employment, with 73.0 percent entering training-related employment.

Grantee: Temple University Center for Social Policy and Community Development (Temple CSPCD)
Program Operator: Grantee
Primary Service Area: Philadelphia, Pennsylvania
TBL Initiative Funding: $695,569
Industry/Sector: Information Technology (IT)
Program Length: 15 to 18 weeks per course
Credential Offered: Certificate
Mode of Instruction: Blended
American Job Center Enrollment and Program: 100 percent from Wagner-Peyser
Number Served: 174
Target Population: Under- and unemployed workers
End Date: February 1, 2012

Program Summary: Temple CSPCD's Technology-Based Learning (TBL) program provided three online IT training programs free to people wanting to gain new skills, find employment, or advance their careers. The courses offered include A+ Certification, Microsoft Office Suite Certification, and Medical Office and Accounts Training.

Contextual Factors: At the time the grants were awarded, there was great demand for entry-level IT workers in Pennsylvania.

Experience with TBL: Temple CSPCD had used TBL distance learning strategies for five years before the TBL grant as a part of its Workforce Education and Lifelong Learning (WELL) program. However, it had never used TBL strategies for skills training, and it had never before used a learning management system.

Partnerships: Temple CSPCD's primary partner was the YMCA Education and Technology Center. The YMCA provided classroom space and employed the instructor for the A+ and Microsoft Office classes. Temple CSPCD also worked with the Philadelphia Workforce Investment Board (WIB) during the program's design phase.

Recruitment and Intake: Temple CSPCD created information brochures about the TBL program that were distributed to local organizations, including the Philadelphia Housing Authority, American Job Centers, and a number of community and faith-based organizations. To enroll in the TBL program, participants had to demonstrate a sincere interest in IT and vocational skills attainment and show adequate proficiency in reading and math (at the ninth-grade level).

Training Delivery: All courses took 15 to 18 weeks to complete. For the online component, participants were required to view PowerPoint slides, complete reading assignments, and take online quizzes after each unit to test their knowledge. Participants were also required to attend in-person classes—once a week for the Medical Office and Accounts course and once every other week for the A+ and Microsoft Office courses.

Participant Characteristics: About 61.1 percent of participants were female. They had an average age of 37.4. Nearly all (95.2 percent) were black, and all had a high school diploma or general educational development (GED) credential. All were employed at the time of enrollment. Only 0.8 percent were veterans, and none were low income or had limited English proficiency or a disability.

Program Outcomes: Most participants (86.8 percent) completed training, but only 24.3 percent attained a credential. About 44.4 percent entered unsubsidized employment. Information on whether they entered training-related employment is not available.

Grantee: The Guidance Center (TGC)
Program Operator: Grantee
Primary Service Area: Wayne County, Michigan
TBL Initiative Funding: $500,000
Industry/Sector: Health Care/Mental Health Direct Care
Program Length: 30 minutes to 3 hours
Credential Offered: Certificate
Mode of Instruction: Online
American Job Center Enrollment and Program: Not available
Number Served: 9,012
Target Population: Incumbent workers
End Date: February 1, 2012

Program Summary: The Care and Training Supports (CATS) project was designed to expand access to training opportunities for direct-care workers in Wayne County, Michigan. The program aimed to increase the number of mental health direct-care workers in Wayne County and to improve their skills, abilities, and standing in the profession. Through CATS's online training, both experienced workers and those who had just begun work in the field could fulfill the training requirements set forth by the Detroit Wayne County Community Mental Health Agency (DWCCMHA).

Contextual Factors: At the time the grant was awarded, the mental health workforce in Detroit-Wayne County was approximately 15,000, about half of whom were direct-care workers. The direct-care portion of the workforce suffered from extremely high turnover rates due to inadequate preparation and a shortage of ongoing training opportunities, as well as low pay.

Experience with Technology-Based Learning (TBL): Since its launch in 2008, TGC's Virtual Center of Excellence (VCE) had provided online training opportunities for the mental health workforce. The CATS initiative was VCE's newest program.

Partnerships: TGC worked closely with DWCCMHA, which was its main funding source. Leaders from both organizations met frequently to discuss the training needs of the mental health workforce. TGC also worked closely with three other Wayne County mental health direct-care training and employment agencies. Representatives from each of these agencies were responsible for advising TGC on what courses to include as a part of the CATS program and what content was necessary within those courses.

Recruitment and Intake: CATS recruited by sending emails with class announcements to VCE's registered members; it also had other Wayne County direct-care training and employment agencies send similar emails. The program's most successful recruitment strategy was to attach informational flyers to employee paychecks. Other than working in direct care in Wayne County, there were no eligibility requirements for registering with VCE and accessing the training resources.

Training Delivery: At the time of the site visit in fall 2009, four courses were available online, and several more were going through the editing process. The courses were online videos of lectures or presentations on a given topic, combined with quizzes to test content retention. Courses ranged from 30 minutes to three hours. When new courses were being filmed, participants could also attend in person if they preferred.

Participant Characteristics: Males represented about one-fourth of female enrollment (12.5 versus 46.0 percent) for participants with information on gender (58.5 percent). Average participant age was 38.9. Most (81.0 percent) were black and had a high school diploma or general educational development (GED) credential (85.3 percent). All were employed at the time of enrollment, and none had limited English proficiency. Information is not available on low-income, veteran, or disability status.

Program Outcomes: Most participants (91.0 percent) completed the program and attained a certificate. All entered unsubsidized employment related to the training.

Grantee: University of Colorado, Denver (UCD)
Program Operator: Grantee
Primary Service Area: Nationwide
TBL Initiative Funding: $502,696
Industry/Sector: Energy Management
Program Length: 18 months
Credential Offered: Master's Degree
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 162
Target Population: Prior industry experience and incumbent workers
End Date: February 1, 2012

Program Summary: The Global Energy Management (GEM) program at UCD focused on providing experienced professionals with a graduate degree tailored to mid- to upper-level management positions in the energy industry. The GEM program offered a unique Master of Science degree developed out of close collaboration between UCD's business school and Denver-area energy companies. The 18-month program had a blended learning model, which included a four-day in-person component each quarter, along with online instruction via an Learning Management System (LMS) and Adobe Connect. Most students were from the Denver area, but GEM also had students from across the country and some international students.

Contextual Factors: The Denver area was a logical location for the GEM program, as the area had emerged in recent years as a major hub for both domestic and international energy companies. Until recently, the energy industry—both locally and worldwide—experienced annual growth of around 30 percent. In addition, many senior managers in the industry were expected to retire soon, probably leading to high demand for new managers.

Experience with Technology-Based Learning (TBL): UCD began offering online courses in 1994; however, the blended nature of the GEM program made it unique when compared to other online classes at the university.

Partnerships: GEM worked closely with a number of local energy companies that provided input on many issues, including curriculum design and faculty recruitment. These partners also provided financial support to GEM, both directly and by covering tuition for their workers enrolled in the program.

Recruitment and Intake: Recruitment primarily occurred via the program's website and presentations at energy and graduate career fairs. GEM applicants were required to complete a standard UCD Business School application, but they were ranked for admission based on years of experience in the energy industry, whether they had an undergraduate energy degree, and the caliber of their professional references.

Training Delivery: At the beginning of each quarter, all GEM students had to attend an intensive four-day in-person session, which included an orientation and delivery of course content. For the rest of the quarter, all coursework was conducted online. Program instructors prerecorded weekly lectures to coincide with assigned readings and mandatory responses to questions posted on the course's discussion board. Each course also included a group project component, with students collaborating and communicating through Adobe Connect. All courses concluded with a final project and/or exam.

Participant Characteristics: Most (83.8 percent) participants were male and white (72.7 percent). About 14.8 percent were Hispanic, and 10.2 percent were black. All held at least a bachelor's degree, and nearly all (95.4 percent) were employed at enrollment. About 3.5 percent were veterans, and none had limited English proficiency. Information is not available on age and low-income or disability status.

Program Outcomes: More than three-quarters of participants completed training and attained a credential (78.0 percent). About 87 percent entered unsubsidized employment, and 72.8 percent entered training-related employment.

Grantee: Western Governors University (WGU)
Program Operator: Grantee
Primary Service Area: California, Texas, and Utah
TBL Initiative Funding: $500,000
Industry/Sector: Health Care/Registered Nursing
Program Length: 2 years
Credential Offered: Bachelor's Degree
Mode of Instruction: Blended
American Job Center Enrollment and Program: Not available
Number Served: 222
Target Population: Low-income workers
End Date: February 1, 2012

Program Summary: WGU's Multi-State Approach to Preparing Registered Nurses (MAP-RN) program was a prelicensure bachelor's degree program that combined online instruction, high-fidelity simulations, and compressed clinical rotations. The program took two years to complete and attempted to parallel the final two years of a traditional bachelor's degree in nursing program. The curriculum was developed to ensure that participants met competencies directly linked to the National Registered Nurse Licensing Exam.

Contextual Factors: The project was designed to increase the supply of registered nurses, while addressing the nursing industry's lack of training capacity. In 2005, the nation faced a shortage of 189,000 nurses, but limited capacity caused 147,000 qualified applicants to be turned away from training programs. WGU hoped that the MAP-RN program would serve as a national model for Technology-Based Learning (TBL) nursing education.

Experience with TBL: WGU is the only accredited university using an online, competency-based training model. The school was chartered in 1996, incorporated as a private university in 1997, and began providing online educational services in 1999. WGU also offers other competency-based online training programs for teaching, information technology (IT), business, and health professionals.

Partnerships: Three hospital systems administered the clinical component. A fourth critical partner was the California Labor and Workforce Development Agency, which helped facilitate the partnerships.

Recruitment and Intake: Although the MAP-RN program did not actively recruit any specific group, there was a push to extend recruitment and outreach to incumbent workers at partner hospitals. Beyond this, most recruitment efforts were handled by WGU's marketing team, which strategically advertised the program through the internet and television. To fully participate in the program, students had to be admitted to both the Pre-Nursing Curriculum and the Clinical Nursing Program, both of which had separate rigorous screening and admission requirements.

Training Delivery: The MAP-RN training contained three key components: a self-paced synchronous and asynchronous online component, an in-person high-fidelity simulation component, and a clinical training component. Staff expected students to complete courses within a specific time frame in order to participate in simulation labs (which only occurred at certain times in the term) and the clinical component. Each participant was assigned (1) a mentor for academic help in the clinical-intensive component of certain courses, (2) a clinical coach who was shadowed for five full 12-hour shifts over a two-week period, simulating a real-life nursing experience; and (3) a clinical instructor who oversaw the student-coach pairs at a hospital and was responsible for determining whether a student passed the clinical component of a course.

Participant Characteristics: Most participants (76.6 percent) were male. They had an average age of 36.4. About 32.0 percent were black, 30.3 percent were white, 21.1 percent were Asian or Pacific Islander, and 14.9 percent were Hispanic. A majority (63.5 percent) had at least an associate's degree. About 78.4 percent were employed at enrollment, and 5.9 percent were veterans. None had a disability. Information on low-income status or limited English proficiency is not available.

Program Outcomes: About 22.1 percent of the participants completed the training and attained a credential. Information on employment outcomes is not available.

Grantee: Wake Technical Community College (WTCC)
Program Operator: Grantee
Primary Service Area: Wake and Johnson Counties, North Carolina
TBL Initiative Funding: $383,686
Industry/Sector: Information Technology (IT)
Program Length: Up to 1 year
Credential Offered: Certificate
Mode of Instruction: Online
American Job Center Enrollment and Program: Prior industry experience and people with disabilities
Number Served: 971
Target Population: Prior industry experience and people with disabilities
End Date: February 1, 2012

Program Summary: WTCC used resources provided by the Technology-Based Learning (TBL) Initiative to bring four of its IT certificate programs online. These certification programs fell into two specific subject areas: networking and programming. Each certificate was a subset of a two-year associate's degree in networking or programming. The certificates were counted toward a two-year degree at WTCC if the student wanted to continue his or her education after completing the certificate.

Contextual Factors: Research Triangle Park (where WTCC is located) is a technology hub, with a strong employer base in IT. Labor market research confirmed that the certificates selected for this grant led to jobs in high-growth occupations in the IT industry.

Experience with and Approach to TBL: WTCC began offering online courses in 1997. In fall 2009, it offered 205 online courses with 388 sections to 8,623 students. The four online courses supported by the TBL grant differed from WTCC's other online programs in that they enabled students to do lab work online.

Partnerships: WTCC had a strong and active network of industry and workforce partners. The partners specifically involved with the TBL program were the Capital Area Workforce Development Board, the Research Triangle Regional Partnership, and Futures, Inc, a private technology company. Employers were involved in the grant mainly through the program's advisory boards.

Recruitment and Intake: Recruitment methods included posting flyers on campus and at American Job Centers, posting videos on the college website, and directing potential participants who contacted the college to speak with the two engineering and IT program recruiters who were familiar with the grant. These recruiters helped prospective participants complete the admissions process and acted as their academic advisers for their first semesters.

Training Delivery: All courses lasted 16 weeks, with students completing one module per week. There was a required sequence of modules and courses for each of the four certificates. The certificates took two to three semesters to complete; all of them could be completed within a year. The content of the courses was delivered through Blackboard, and the networking certificate also uses Cisco's Networking Academy. This program was designed to be completely online and was innovative in its use of "online labs," wherein participants were able to log onto an online programming environment to do lab assignments. There were two systems used for the online labs. The networking programs used a system based at WTCC called NETLAB, which allowed participants to remotely administer real networking equipment. The programming courses used a system based at North Carolina State University, called the Virtual Computing Lab, which consisted of several hundred Blade servers that provided each user with all the software and tools needed to complete course assignments.

Participant Characteristics: Most participants were male (77.0 percent) and white (79.6 percent). About 15.2 percent were black. About 59.5 percent were employed at enrollment. Information is not available on age, education at enrollment, limited English proficiency, or low-income, veteran, and disability status.

Program Outcomes: About 2.9 percent attained a certificate. Information is not available on program completion or employment after training.

Grantee: West Virginia University at Parkersburg (WVUP)
Program Operator: Grantee
Primary Service Area: Parkersburg, West Virginia and the surrounding counties
TBL Initiative Funding: $469,164
Industry/Sector: Health Care/Certified Nursing Assistant (CNA)
Program Length: 9 weeks
Credential Offered: Certificate
Mode of Instruction: In-person
American Job Center Enrollment and Program: Not available
Number Served: 236
Target Population: Dislocated and incumbent workers
End Date: February 1, 2012

Program Summary: The primary goal of WVUP's Expanded Access Program (EAP) was to provide CNA training in rural areas using videoconferencing technology.

Contextual Factors: The Mid-Ohio Valley Workforce Investment Board (WIB) noted a high demand for health care professionals in the region. A survey of five rural hospitals that served the area also indicated a large demand for qualified CNAs. However, accessing training opportunities was difficult for West Virginia's rural population.

Experience with and Approach to Technology-Based Learning (TBL): WVUP was inexperienced in using TBL strategies and methods.

Partnerships: WVUP's primary partners in this project were the hospitals and medical centers in WVUP's service region. These employers provided classroom space for viewing the videoconference lectures and facilities for conducting required clinical sessions. WVUP also worked with the Mid-Ohio Valley WIB during the design phase of the program.

Recruitment and Intake: The coordinator's two main strategies for recruiting participants were advertising the program in the local rural papers and attaching flyers to pizza boxes. Students who wished to enroll in the program needed to fill out the free WVUP application either in person or online. There were no eligibility criteria other than having a high school diploma or general educational development (GED) credential.

Training Delivery: The program took about nine weeks to complete. The first half of the course consisted of lecture and lab skills classes. Lectures were broadcast live from WVUP to remote sites, where clinical instructors were present to provide participants with hands-on training. The second half of the course was spent participating in clinical sessions and preparing for the certification exam. Participants were required to attend lectures, complete reading assignments, and take in-person quizzes to test their knowledge and skills.

Participant Characteristics: Most participants (89.4 percent) were female, and nearly all (98.3 percent) were white. The average participant age was 31.7. About 46.1 percent were employed at enrollment, 5.0 percent were veterans, and 3.9 percent had a disability. Information is not available on education at enrollment, low-income status, or limited English proficiency.

Program Outcomes: About 72.8 percent of participants completed training, and 67.2 percent attained a credential. Almost one-third (32.2 percent) entered unsubsidized employment related to the training.

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