



GreenWays



JOBS FOR THE FUTURE

CONTEXTUALIZED LITERACY IN GREEN JOBS TRAINING

BY ALEXANDRA WAUGH
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Jobs for the Future works with our partners to design and drive the adoption of education and career pathways leading from college readiness to career advancement for those struggling to succeed in today's economy.

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The **GreenWays** initiative provides high-quality workforce services to employers and to workers seeking to advance their careers in the green economy. The initiative invests in twenty workforce partnerships across six diverse industry sectors in eight metropolitan labor markets. It builds on JFF's approach of organizing employers and workforce resources into sectoral workforce partnerships that promote career advancement for lower-skilled workers. GreenWays is supported by grants from the U.S. Department of Labor through Pathways Out of Poverty and the Green Jobs Innovation Fund.

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INTRODUCTION

Millions of adult Americans lack the basic literacy skills necessary to perform everyday tasks requiring basic reading and math. This stifles our economy, given that employers are increasingly likely to require education or training beyond high school. In fact, the Center on Education and the Workforce at Georgetown University predicts that nearly two-thirds of new job openings from 2008 to 2018 will require at least some postsecondary education or training (Carnevale, Smith, & Strohl 2010). Besides the broad impact on the nation's economy, the nation's workers suffer when they lack the skills needed to compete for family-sustaining jobs. Worse, millions of jobseekers fall short even of the skill levels needed to enter the training programs that would qualify them for those jobs.

Organizations that provide job training to lower-skilled adults through Jobs for the Future's GreenWays initiative have found they can better prepare workers for advanced occupational training and skill development by integrating the teaching of

literacy and numeracy skills into basic occupational training programs. Drawing on our experiences in the GreenWays initiative, JFF prepared this brief to assist program designers and literacy instructors at job training programs that serve lower-skilled adults. It explores the interrelationship of the nation's literacy rates, the growth of middle-skill jobs, and the importance of integrating literacy skills into workforce training.

This brief focuses on the model of contextualized instruction, illustrating it by case studies drawn from GreenWays programs in Philadelphia and Detroit that have integrated contextualized basic skills education into their occupational training programs. These programs use two different approaches to providing contextualized literacy: Philadelphia's Green Job Readiness Partnership developed a customized curriculum oriented to the program's participants and Detroit's Green Jobs Training Program offered an off-the-shelf curriculum.

THE SCOPE OF THE LITERACY CRISIS

Thirty million adults aged 16 and older test at “below basic” on literacy skills and have difficulty performing the most basic literacy tasks, such as reading and understanding information in simple documents. An additional 63 million adults have only “basic” literacy skills: They can perform everyday tasks like reading a newspaper or solving simple math problems (NCES 2006). Many of the nation’s cities have staggering rates of functional illiteracy. For example, 52 percent of adults in Philadelphia have basic or below basic literacy skills (Philadelphia Workforce Investment Board 2009). Similarly, about 47 percent of Detroiters are considered functionally illiterate despite the fact that roughly half of these individuals have a high school credential (Detroit Regional Workforce Fund 2011).

Given that adults lacking literacy skills find it almost impossible to get jobs that pay family-sustaining wages, it should come as no surprise that the unemployment rate for those with less than a high school credential is 12.0 percent, compared with 3.7 percent for those with a Bachelor’s degree (BLS 2013). Yet it is not necessary to have a Bachelor’s degree for many family-sustaining jobs. The unemployment rate is 6.9 percent for those with some college. Moreover, about half of today’s jobs are considered middle-skill occupations, requiring education beyond high school but less than a four-year degree. Middle-skill jobs are

expected to generate 45 percent of job openings from 2004 to 2014 (Holzer & Lerman 2007). Additionally, it is predicted that nearly two-thirds of new job openings from 2008 to 2018 will require at least some postsecondary education or training (Carnevale, Smith, & Strohl 2010).

At the same time, employers already report they cannot meet their needs for workers to fill these middle-skilled jobs, given that a large segment of the workforce lacks the necessary education and work readiness skills. Besides the low literacy levels already noted, nearly 31 million adults aged 18 and older lack a high school credential, and an additional 45 million do not have a postsecondary credential or degree (U.S. Census 2011).

The existing skills mismatch is expected to grow in coming decades as the demand for mid-level skills outpaces the supply of qualified workers. Additionally, the rate of retirement for baby boomers is predicted to occur fastest for low- to mid-skilled occupations, creating even more openings for those with the right credentials. These imbalances affect workers and employers across the labor market: The oversupply of lower-skilled labor depresses those wages, while the undersupply of mid-skilled labor has the opposite effect (Holzer & Lerman 2007).

CONTEXTUALIZED INSTRUCTION

Basic literacy skills—reading, writing, and mathematics—are essential for employment in family-sustaining jobs, yet workforce training providers confront a fundamental challenge head on every time they recruit applicants for occupational training programs that lead to good-paying jobs. They can reject applicants who lack the basic math and reading comprehension skills needed to succeed in technical training. An equally undesirable alternative has been to enroll underprepared applicants who either fail to complete the training or who complete it without mastering the competencies they need. Neither of those paths prepares low-literate adults for family-sustaining jobs, but they have been adopted often, simply because a real alternative—preparing applicants for the programs by raising their literacy skills—has proven to be quite difficult to achieve.

Contextualized instruction offers a highly promising strategy for programs that choose to enroll underprepared students. Integrating the basic skills and occupational instruction can be a more effective, and faster approach than the traditional sequential approach in which the student takes the basic skills classes before entering occupational training. Contextualization embeds the learning of literacy, language, and numeracy skills into the learning of broader content areas, such as construction or health care. Contextualization strategies can be built into

existing occupational training programs by infusing literacy and numeracy skills with occupational content, thereby reinforcing the relevance of those skills to participants. In a review of the literature, Dolores Perin (2011) of the Community College Research Center found that adult literacy education is more successful when reading, writing, and math skills are integrated into occupational training. She specifies contextualizing basic education curricula as one of several ways to accomplish this integration. Contextualization follows the logic that learning is more successful when it integrates both content and procedural knowledge through hands-on experiences (Gillespie 2002).

Contextualized basic skills instruction makes use of a number of learning strategies, including interdisciplinary learning, collaborative learning among students, and the integration of current events and students' experiential knowledge into the curriculum (Perin 2011). Frequently, training programs using contextualization strategies combine classroom and hands-on instruction, teaching skills using active applications based on common workplace practices. For example, students learn fractions while measuring and cutting wood for a class construction project. The classroom and hands-on training reinforce each other, rather than treating each element of job training as an isolated module (Perin 2011).

CASE STUDIES

Occupational training programs incorporate contextualized basic skills instruction in a number of ways. Two of the job training programs in Jobs for the Future's GreenWays initiative integrate contextualized literacy in their curricula, but they have adopted different approaches:

- > In developing its own curriculum, Philadelphia's **Green Job Readiness Partnership** customized it to the students' needs, the content of the training program, and the timeline for training.
- > Detroit's **Green Jobs Training Program** purchased an off-the-shelf, proprietary curriculum, which it then customized to fit the local situation.

While the two training programs have integrated contextualized learning in different ways, both have shown success, serve very-low-literate populations, and focus on many of the same skills sets.

PHILADELPHIA

The Green Job Readiness Partnership is led by the Federation of Neighborhood Centers, a community-based organization serving low-income and lower-skilled Philadelphians. Through GJRP, the federation trains low-skilled workers who have limited work histories in skills needed for energy-efficient buildings, other construction projects, and retrofiting. GJRP's nine-week basic training includes basic literacy and numeracy skills, as well as an introduction to general construction. Upon

completing the program, participants can progress to further training in either advanced construction or weatherization and retrofit installation.

Most training programs that prepare participants for mid-skill jobs require high school-level math and reading for admission, which screens out many potential candidates. The Green Job Readiness Partnership accepts participants testing at the sixth-grade level. GJRP developed a customized curriculum designed to increase participants' reading and math competencies to at least the eighth-grade level, the minimum generally required for admission to advanced job-training programs in Philadelphia.

Through consultation with local employers and with the providers of advanced training, GJRP determined that three literacy competencies are necessary for success in the new construction and weatherization retrofit fields: applied math reasoning, math computation, and technical reading for comprehension. GJRP's literacy curriculum focuses on these competencies, while simultaneously introducing participants to green construction concepts through a combination of classroom and hands-on instruction.

Each week, participants spend twenty-five to thirty hours in the classroom, where a trained adult literacy instructor covers topics in math, science, soft skills, and work readiness. Each week also includes five to seven hours in the United Communities' HomeSense lab learning basic carpentry and related tool-handling skills.

WEEK ONE OF THE GREEN JOB READINESS PARTNERSHIP CURRICULUM

Math: Measurement, plan reading

Geometry Concept of the Week: Polygons and perimeters

Contextualized Literacy and Science: Energy, nonrenewable fuels, sentence structure, punctuation

Soft Skills: Learning styles, study skills, note taking

CareerSense: Goal-setting

Tests: Initial TABE test, fractions pretest

GJRP's curriculum is designed to build reading and math competencies while introducing participants to green industries. Math topics, all delivered using examples from the context of green industries, include measurement, plan reading, fractions, decimals, percents, signed numbers, basic algebra, and geometry. Geometry starts with fundamental concepts and leads up to a more advanced level. Science and reading topics focus on green areas, including energy in general, electricity, renewable and nonrenewable energy and fuels, and climate change and other green-related current events.

Every week, the participants take tests and quizzes on each of the topics covered during that period. These are designed to reinforce the literacy and numeracy skills and the green construction content learned each week. The curriculum also includes a variety of field trips and guest speakers. These opportunities further reinforce the topics participants learn in the classroom, and they provide exposure to local green industries and employers.

GJRP customizes its curriculum to the needs of each cohort of students. Because the curriculum is designed to be flexible, the instructor can respond to participants' needs and interests. This built-in flexibility enables the instructor to vary the time spent on each topic, depending on the cohort. For example, if a cohort has a larger deficit in math, the

instructor spends additional time on the first math unit to help strengthen their math skills and begin to think of math as problem solving using consistent logical systems.

The curriculum also grows and changes based on the experiences and contributions of each cohort of students. For example, when introducing a new math skill, the instructor models several different methods for solving a type of problem, then asks the class for additional approaches. This has led to improvements in the curriculum, including the addition of new approaches, rules of thumb, and strategies. Now, when finding a percentage of change, participants learn three approaches, including Saleem's Method and Tracy's Method, both named for GJRP participants.

The curriculum has also grown based on the participants' feedback on how well it prepared them for further occupational training. For example, participants who moved onto advanced weatherization training reported that their preparation would have benefited from including an understanding of heat transfer and air flow; these topics are now part of the basic skills curriculum. The key is the flexibility of the GJRP curriculum and its ability to grow and change based on participants' needs.

RESULTS: GREEN JOB READINESS PARTNERSHIP

GJRP uses the Test of Adult Basic Education to determine skill gains. The TABE is administered three times during the training, with an initial test in the first week, a midpoint test in the fifth week, and a final test in the ninth week. Based on this series of tests, GJRP has demonstrated success in increasing participants' skill levels in both reading and math (Philadelphia Works 2012). For the ninety-three participants in the first eight cohorts:

- > 65 percent of participants experienced increases of two grade levels or more in reading comprehension.
- > 74 percent experienced increases of two grade levels or more in computational and applied mathematics.
- > Overall, participants had a mean increase of 2.08 grade levels in reading comprehension, 3.17 grade levels in computational math, and 2.62 grade levels in applied math.



THE STUDENT BECOMES THE TEACHER

Before David Dennis enrolled in the Green Job Readiness Partnership in 2010, he had worked in an auto body shop but had also been unemployed for long periods of time. As a participant in GJRP's literacy training, he stood out as exceptional, with a desire not only to learn but also to assist his fellow students. As a result of the nine-week program, he increased his computational math skills by 5.5 grade levels as measured by the TABE. When he completed the program, the staff honored Dennis with the Academic Peer Tutor Award and the HomeSense Peer Tutor Award.

The GJRP then funded Dennis so he could take classes at the Green Jobs Training Center of the Energy Coordinating Agency, a nonprofit that helps people save energy and promotes a sustainable and socially equitable energy future for all in the Philadelphia region. He earned Pennsylvania state certifications as a weatherization assistance program installer, crew chief, and auditor. Next, he received a full scholarship for training that led to national Building Performance Institute certification as a building analyst and to work as a lead insulator and crew chief.

In late 2011, when Dennis's work hours were reduced, the Energy Coordinating Agency invited him to join its staff as an instructor. Today, he is a valued member of the full-time instruction team at ECA, training entry-level students in basic building sciences, energy efficiency principles, and the "house as a system" approach to diagnostic testing. He presents theory lectures and then strengthens the lessons with hands-on lab sessions.

DETROIT

The Detroit Regional Workforce Fund's Green Jobs Training Program trains adults who have limited work histories in the skills needed for employment in hazardous waste removal. Detroiters Working for Environmental Justice, a community-based organization, provides the 12-week training, which includes contextualized basic skills, technical training, and on-site job training. Participants begin with an orientation to green industries and then receive training in environmental assessments, hazardous waste operation, and lead, mold, and asbestos abatement.

Detroiters Working for Environmental Justice accepts participants testing at the seventh-grade level and aims to increase literacy skills to the eighth-grade level or above. The DWEJ curriculum begins with four to six weeks of contextualized basic skills using the Roots of Success curriculum, one of a number of off-the-shelf contextualized literacy curricula that are available to meet the needs of a wide range of participants and training areas. Roots of Success is an environmental literacy, academic literacy, and job-readiness curriculum that builds English, math, computer literacy, and other job skills through the study of a variety of topics, including environmental science, public health, urban planning, and social justice. The literacy component of the curriculum is designed to build skills in math, oral presentation,

critical thinking, and reading, writing, and vocabulary. The curriculum, divided into modules, is designed to be taught by general occupational instructors. All of the modules integrate classroom discussion with hands-on activities that promote student engagement and active learning (see box, "The Roots of Success Modules" on page 8).

DWEJ has customized the Roots of Success curriculum for the Green Jobs Training Program, and the flexible design of the curriculum makes it easy to adapt to a variety of teaching formats. For example, DWEJ has chosen to use Roots of Success as a component of its training program, rather than as the full curriculum or as an integrated element of a literacy program. Also, in addition to the nine modules in the curriculum DWEJ purchased, DWEJ teaches a financial literacy module—and Roots of Success recently added Financial Literacy and Social Entrepreneurship to its own basic curriculum.

DWEJ adds content and learning activities to each module. For example, instructors add a component on safety to the Building Module. They also embed job skills specific to the local labor market, including deconstruction and hazardous waste removal, into each module. In addition, students attend field trips and local community events during their training.

The first four to six weeks of the DWEJ program cover all of the Roots of Success modules. Participants

RESULTS: DETROITERS WORKING FOR ENVIRONMENTAL JUSTICE

DWEJ uses the TABE to test for reading gains and Math for the Building Trades to test for math gains relevant to the skills that local employers have told DWEJ they seek. It administers each test at the start of the Green Jobs Training Program and then again upon completion.

- > According to data from 100 participants in five GreenWays cohorts, 65 percent of participants experienced increases of at least one grade level in reading and math.
- > Since DWEJ began using the Roots of Success curriculum in 2007, 56 percent of its 350 graduates have experienced increases of at least one grade level in reading and math.

Because DWEJ does not test above the eighth-grade level, these measures may understate some participant's actual skill gains.

Source: Interviews with staff and internal program reports

THE ROOTS OF SUCCESS MODULES

Detroiters Working for Environmental Justice uses all of the modules in the Roots of Success Curriculum it purchased:

- > **Fundamentals of Environmental Literacy** helps participants understand natural systems, biological systems, and social systems; the connection between human activity and the environment; and the science behind climate change.
- > The **Water Module** focuses on basic concepts and issues relevant to such topics as water extraction, management, and use and the characteristics of water.
- > The **Waste Module** includes a range of issues related to waste management and resource recovery.
- > The **Transportation Module** includes topics related to land use planning, transportation systems and transportation modes, fossil fuels and alternative fuels, vehicular use, urban sprawl, air contamination, and transit-oriented development.
- > The **Energy Module** introduces basic concepts and issues relevant to energy production and use, the characteristics of energy and electricity, the role of different energy sources, and strategies to reduce energy use.
- > The **Building Module** focuses on basic concepts and issues related to building, land use planning, and green building.
- > The **Food, Health, and Agriculture Module** focuses on human health, food systems, and agricultural production.
- > The **Community Organizing and Leadership Module** introduces students to civic engagement, advocacy, community organizing, and leadership approaches, strategies, and skills.
- > The **Application and Practice Module** provides an opportunity for students to apply the knowledge and skills they have learned in the classroom to real-world situations.

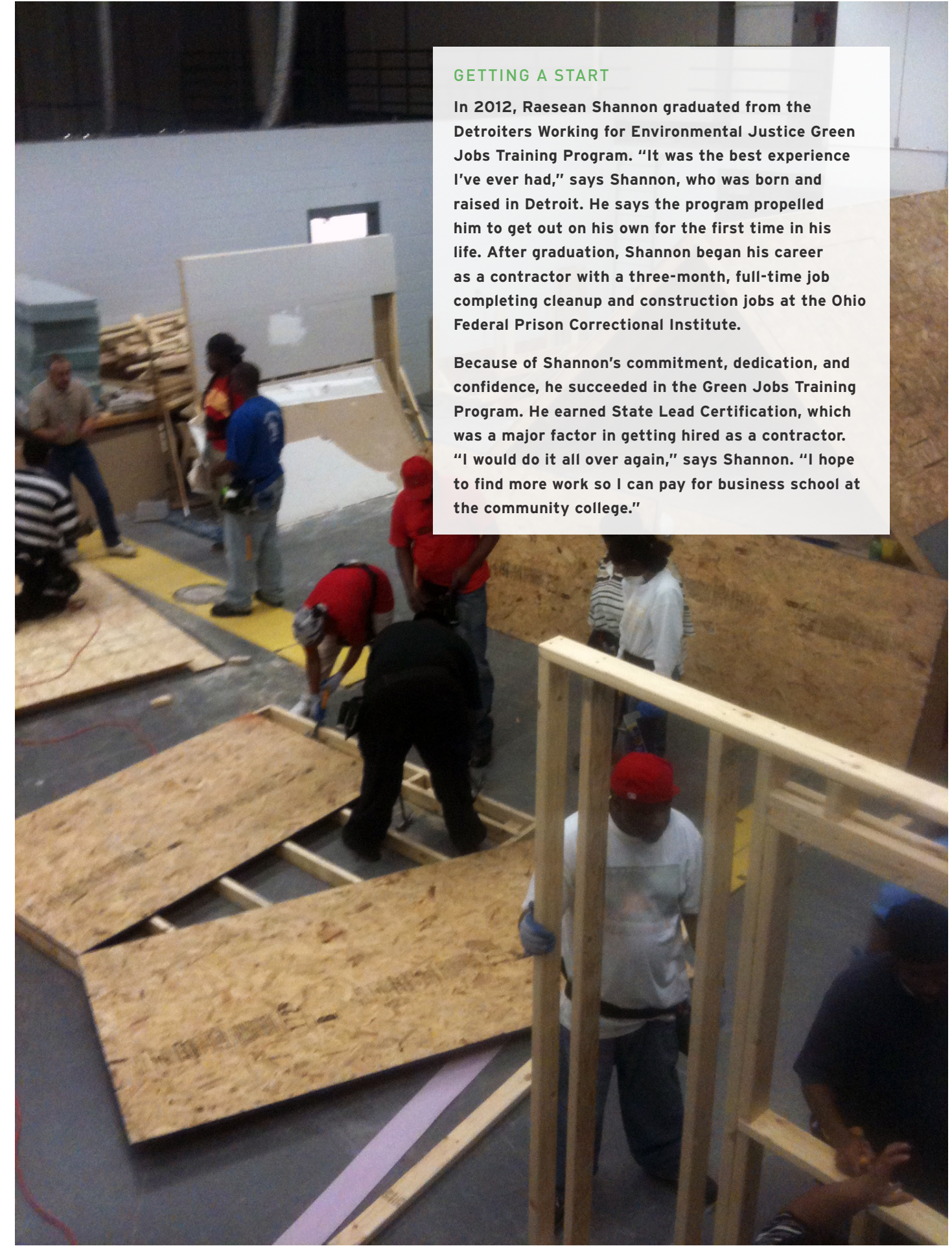
After teaching the Fundamentals module, instructors can teach as many or as few additional modules as they choose. They also can increase or decrease the time spent on each module from its original design of four hours.

Since DWEJ began using these modules, Roots of Success added another, **Financial Literacy and Social Entrepreneurship**. This module focuses on developing personal financial literacy and introduces participants to business practices and skills, green business principles, and how they can respond to local environmental problems through entrepreneurial initiatives.

For more information, see the Roots of Success website: <http://rootsofsuccess.org>

spend about 20 classroom hours per week working through the modules and an additional 20 hours per week doing hands-on training in environmental assessments, hazardous waste operation, and lead, mold, and asbestos abatement.

Before DWEJ instructors used the Roots of Success curriculum, they attended a required “train-the-instructor” course and licensing session. These one-day sessions cost DWEJ \$6,000 for up to 15 instructors. This includes the cost of an instructor’s manual and a DVD containing the visual content for each module. Additional costs include \$50 per student workbook that must be replaced with each cohort.



GETTING A START

In 2012, Raesean Shannon graduated from the Detroiters Working for Environmental Justice Green Jobs Training Program. "It was the best experience I've ever had," says Shannon, who was born and raised in Detroit. He says the program propelled him to get out on his own for the first time in his life. After graduation, Shannon began his career as a contractor with a three-month, full-time job completing cleanup and construction jobs at the Ohio Federal Prison Correctional Institute.

Because of Shannon's commitment, dedication, and confidence, he succeeded in the Green Jobs Training Program. He earned State Lead Certification, which was a major factor in getting hired as a contractor. "I would do it all over again," says Shannon. "I hope to find more work so I can pay for business school at the community college."

SELECTING A CURRICULUM

Occupational training programs that serve low-literacy adults have a number of options available when choosing to incorporate contextualized basic skills. Like the case studies included here, programs can purchase a proprietary curriculum, develop their own, or use a combination of the two and create a hybrid.

When making this choice, training programs need to think about the design of the literacy instruction (e.g., sequential or concurrent courses, separate basic skills or literacy classes, just-in-time literacy instruction) and the materials they will use to contextualize the occupational content. Detroiters Working for Environmental Justice purchased the Roots of Success because that curriculum fit well with the content and goals of its training program and could be taught by occupational instructors who were not specialists in adult education. The Green Job Readiness Partnership chose to create its own curriculum because it could not find a contextualized curriculum for energy efficiency training that met its specific needs, and it had access to an experienced adult education teacher. As evidenced by these two programs, both choices can be effective in increasing reading and math skills (see *Table 1 on page 11*).

Each curriculum option has advantages and disadvantages that organizations should weigh when selecting a method to provide contextualized literacy training (see *Table 2 on page 11*).

Proprietary curricula like Roots of Success require little staff time or specialized adult education expertise to develop, and they often come with

a support network for sharing experiences and best practices with other users. Also, a third party evaluates proprietary curricula using standardized metrics. However, the cost to purchase a curriculum, train instructors, and supply students with materials can be high. It may also be difficult to tailor a prefabricated curriculum to fit the needs of each individual cohort of trainees.

Customized curricula are designed to address the specific needs of a training program and can be tailored to each cohort of students. Also, the training program owns the materials created. However, it takes significant staff time and capacity to develop the curriculum. Additionally, a custom curriculum is not subject to a third-party evaluation and does not come with a support network for instructors.

Both options have yielded positive results. Instructors from both programs attribute much of this success to the programs' ability to tailor the curriculum to the needs of each cohort. In Philadelphia, the GJRP curriculum is a living document, and the program makes additions after each cohort, drawing on feedback from participants, instructors, and employers (e.g., the addition of heat transfer and air flow to the curriculum). In Detroit, DWEJ has customized the Roots of Success curriculum to fit the needs of its participants by adding content to each module and including additional modules (e.g., the addition of the financial literacy module). DWEJ has also embedded job skills that are specific to the local labor market into each Roots of Success module.

**TABLE 1.
TRAINING COSTS AND BENEFITS**

	DETROIT	PHILADELPHIA
Cost to offer	\$6,000 for train-the-instructor course and an instructor's guide, with up to 15 instructors; \$50 per student workbook	0.75 FTE for 3 months of curriculum development and design
Hours of Instruction	240	250
Number of students	350	93
Median grades advanced in reading	1*	2.08
Median grades advanced in math	1*	3.17 computational math 2.62 applied math

* Because DWEJ does not test above the eighth-grade level, these measures may understate some participants' actual skill gains.

**TABLE 2.
PROS AND CONS OF OFF-THE-SHELF CONTEXTUALIZED AND CUSTOM CURRICULA**

	OFF-THE-SHELF	CUSTOM
Pros	<ul style="list-style-type: none"> > Requires minimal staff time or capacity to develop > Evaluated by a third party according to standardized metrics > Curriculum developer and other users provide network for best practices, support 	<ul style="list-style-type: none"> > Limited costs beyond staff time and capacity > Program owns the materials and can use in the future > Can tailor to student needs, training program content, and timeline
Cons	<ul style="list-style-type: none"> > More expensive—cost for instructor's guide and training and individual student workbooks > More difficult to tailor to student needs, training program content, or timeline 	<ul style="list-style-type: none"> > Requires adult learning expertise to develop > Requires research into industry sector for contextualized content > Not evaluated by a third party according to standardized metrics

CONCLUSION

Workforce training providers must tackle the literacy gap if they are to prepare low-skilled adults for jobs that pay family-sustaining wages. Traditional approaches to Adult Basic Education can take years to build adult learners' skills to the level that qualifies them for technical occupational training programs—time that few adults can afford to invest. As a result, training programs seem to confront several bad choices. They can screen out many of the people their missions drive them to serve. They can accept unqualified applicants and see them fail. Or they can water down their occupational training to the point that program completers are not competitive in the job market. None of these options are attractive.

Incorporating high-quality contextualized literacy that focuses on the specific skills needed to succeed in occupational training and a career is an effective alternative. Contextualization has been shown to be effective in a number of different types of programs designed to educate working adults with very low skills levels (see box, “*Breaking Through and Accelerating Opportunity*”). Training providers can use the examples in this brief to compare approaches for including contextualized literacy in their curricula in the way that best meets the needs of their organizations and the participants they serve.

BREAKING THROUGH AND ACCELERATING OPPORTUNITY

Contextualized learning is a key strategy in two initiatives that seek to improve the ability of low-skill, low-literacy adults to advance in the labor market. Both Breaking Through and Accelerating Opportunity change the delivery methods and content of instruction, enabling students to meet their educational goals faster.

Since 2005, Breaking Through, a Jobs for the Future collaboration with the National Council on Workforce Education, has promoted and strengthened the efforts of community colleges to help low-skilled adults prepare for and succeed in occupational and technical degree programs. Breaking Through proves that low-skilled adults can advance through remediation and earn postsecondary credentials while saving time and money. *For more information, see www.breakingthroughcc.org.*

Accelerating Opportunity, a JFF initiative launched in 2011, seeks to ensure that more workers have the skills they need for today's good jobs. It builds on the foundation of both Breaking Through and Washington State Board of Community and Technical College's Integrated Basic Skills and Training (I-BEST). The goal of Accelerating Opportunity, an unprecedented investment in low-skilled adult learners, is to transform the Adult Basic Education system and enable many more adults to earn credentials leading to family-sustaining careers. *For more information, see www.acceleratingopportunity.org.*

The Contextualization Toolkit: JFF developed this set of tools, part of the *Breaking Through Practice Guide*, to help practitioners serve adults who have low literacy and math levels and who want to succeed in postsecondary education. It is available at: <http://www.jff.org/publications/education/breaking-through-practice-guide/1059>.

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