



Registered Apprenticeship Summit 2017

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Kentucky Department of Education
Our Children, Our Commonwealth



Education and Workforce Development Cabinet



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Thank You!

September 11-12, 2017

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WORKING AGENDA

Day 1- Monday, September 11, 2017

Celebrating Kentucky Apprenticeship: A Graduation.....6:00-9:00 p.m.
Secretary Derrick K. Ramsey, Kentucky Labor Cabinet

Day 2- Tuesday, September 12, 2017

Welcome.....9:00 a.m.
Secretary Ramsey and Miranda Combs, WKYT Anchor & Program Emcee

Opening Ceremony.....9:00-9:15 a.m.
Governor Matthew Bevin

Score Employability through Registered Apprenticeships.....9:15-9:30 a.m.
Secretary Derrick K. Ramsey

Creating Apprenticeship Synergy through Leadership:
 Meet the Cabinet Heads.....9:45-10:00 a.m.
Secretary Hal Heiner, Commissioner Stephen Pruitt, & Executive Officer Vivek Sarin

Break.....9:45-10:00 a.m.

Apprenticeships in the United States: What We are Learning.....10:00-10:30 a.m.
Michelle Sager, Economic Development Director, National Governors' Association

ROI.....10:30-11:30 a.m.
Dr. Robert I. Lerman, Urban Institute & American University

Lunch.....11:45- 12:45 p.m.

Sector-focused Breakouts (Repeat).....1:00-3:00 p.m.
Education, Healthcare, IT, Manufacturing, Trades

The New Cultural Expectation: Registered Apprenticeships.....3:00 -3:30 p.m.

Adjourn.....4:00 p.m.



Summit Faculty

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Matt Bevin
Governor
Commonwealth of Kentucky

Governor Matt Bevin is a husband, father of nine children, veteran, small business owner and is currently serving as the 62nd Governor of Kentucky. In his first term as Governor, he presented and worked to pass the most fiscally responsible budget in Kentucky's history, strengthening and stabilizing Kentucky's financial foundation and future. Through initiatives like Red Tape Reduction and Kentucky Trained, Kentucky Built, he is working to help Kentucky become the hub of excellence in engineering and manufacturing in America.

Gov. Bevin is committed to investing in education and workforce development, reforming foster care and adoption, creating a healthier Kentucky, protecting those who protect us and creating open and transparent government.



Laura Arnold
Associate Commissioner
Office of Career & Technical Education

Ms. Arnold is the Associate Commissioner for the Office of Career and Technical Education, Kentucky Department of Education. She assumed these duties in September, 2015. Prior to this role she served as a Division Director and Branch Manager for the Office of Career and Technical Education. She was an area technology center principal for 5 years and a middle school family and consumer sciences teacher for 6 years. She received her bachelors and master's degrees from the University of Kentucky.



Dr. Jay Box
President
Kentucky Community &
Technical College System

Dr. Jay K. Box was named the second president of the Kentucky Community and Technical College System (KCTCS) on November 19, 2014. He is a community college graduate and has more than 30 years of experience in community college leadership.

Dr. Box has a history of leadership within KCTCS, having served as the president of Hazard Community and Technical College from 2002 – 2007, followed by being named KCTCS vice president. In 2009, he was named chancellor and served in that role until being selected president of the System.

Prior to joining KCTCS, Dr. Box served as a vice president at McLennan Community College in Waco, Texas.

He serves on the national board for Rebuilding America's Middle Class and the Kentucky Workforce Innovation Board. He is an ex-officio board member of the Kentucky Chamber of Commerce.

Additionally, Dr. Box is a member of the Bill and Melinda Gates Foundation's National Advisory Group, National Council of State Directors of Community Colleges, American Association of Community Colleges Sustainability Education and Economic Task Force, Southern Regional Education Board's Commission on Career and Technical Education and Aspen Institute's Innovation in Higher Education Working Group.

Dr. Box received an associate degree from Howard College, a bachelor's degree in education from Southwest Texas State University, a master's degree in education from Texas Tech University and a doctorate in educational administration, higher education/community college specialty from Baylor University.

He is a native of Crane, Texas. His wife, Gayle a retired educator. They have one son.



Brittany Burke
Nurse Manager
Student Nurse Extern & Apprenticeship Program
Norton Healthcare

Brittany Burke is the Nurse Manager of the Student Nurse Extern/Student Nurse Apprenticeship Program (SNAP) with Norton Healthcare, Institute for Nursing. Burke graduated with her MSN, Nursing Administration from the University of Cincinnati, is a certified Obstetric Nurse, and is currently a student in the DNP program at Northern Kentucky University. Burke is an experienced nurse leader with a demonstrated history of working in the hospital and healthcare industry as a registered nurse, clinical instructor, clinical educator, and program developer. Burke is a member of the Association of Women's Health, Obstetric and Neonatal Nurses, and Sigma Theta Tau International. Burke enjoys investing in student nurses during their transition from education to practice, as well as, collaborating with colleagues by creating an environment for learning and success.



Emmanuel Caulk, ME.d, J.D.
Superintendent
Fayette Co. Public Schools
Lexington, KY

Emmanuel “Manny” Caulk joined the Fayette County Public Schools on Aug. 3, 2015, as the unanimous choice of the Fayette County Board of Education to lead the second largest school district in the Commonwealth of Kentucky. He is the servant superintendent to roughly 41,000 students and more than 5,000 employees. Nearly 90 percent of the school-aged children in Fayette County attend the district’s 66 schools and special programs, where the student population is 53 percent white, 22 percent black, 15 percent Hispanic and 4 percent Asian. Roughly 51 percent of students in the district qualify for free or reduced lunch, 11 percent of students receive special education services and 10 percent of students are English Language Learners who come to school speaking 82 different native languages.

Previously, Caulk served as Superintendent of Portland Public Schools the largest district in the state of Maine serving 7,000 students PreK-12 and more than 4,000 adults who attended the Portland Adult Education program. Portland Public Schools serves a diverse student population comprised of approximately 40 percent students of color, 30 percent English Language Learners, and 55 percent of students living in poverty.

Before that, Caulk was the Assistant Superintendent with the School District of Philadelphia, in one of the nation’s most historic cities and Pennsylvania’s largest school district, serving over 157,000 students. He supervised Academic Division 8 comprised of 36 schools serving 16,500 students. Under his leadership schools demonstrated gains in reading and math as measured by student performance on the state assessment. Caulk also served as the assistant regional superintendent and deputy chief for the office of instruction and leadership support.

Prior to joining the School District of Philadelphia, Caulk served as the assistant superintendent for high schools of the East Baton Rouge Parish School System, overseeing the district’s 15 high schools and 12,000 students. Caulk implemented high school redesign initiatives across the lowest performing high schools, implemented a tiered intervention model for school supports, increased the number of advanced placement and dual enrollment courses, and implemented a dropout

prevention and re-entry program for nontraditional students; thereby, providing multiple pathways for student success, while increasing student achievement.

Caulk previously served as a leadership coach on the High School Transformation project with Chicago Public Schools and later as a regional director with a charter organization.

Before relocating to Chicago, Caulk served as an administrator at the high school, middle school, and elementary school level. He also practiced law serving as an education law attorney and former assistant prosecutor for the state of New Jersey. His teaching experience consists of serving as a special education teacher with the New Castle County Detention Center serving non-adjudicated youth in the state of Delaware.

He holds a bachelor's and master's degree from the University of Delaware and a juris doctor's degree from Widener University School of Law. Caulk is currently in the process of completing his dissertation to earn his doctorate degree from National-Louis University.



**Miranda Combs
News Anchor &
Investigative Reporter
WKYT**

Miranda Combs is WKYT's investigative reporter and anchor of WKYT News at 6:30 on the CW Lexington. Miranda has been a part of WKYT since 2002. She started as the crime reporter and weekend anchor, eventually moving on to anchor the FOX 56 10 O'Clock News.

She's been the station's investigative reporter since 2013 and recently joined Anchor Sam Dick on WKYT's 6:30 newscast on the CW Lexington.

Miranda was the 2016 'Reporter of the Year,' according to the Kentucky Associated Press-- and has been Emmy nominated two years in a row for her coverage of Kentucky's drug epidemic.

She has two young boys, ages 7 and 4.



Brittany Cress
Apprentice Administrator
Mubea

Brittany has worked for Mubea for 3 years working in the Training and Apprenticeship departments. Brittany graduated from Northern Kentucky University with a Bachelors in Social Work. She enjoys working with people and helping others set goals and achieve their career paths. Her role at Mubea as the Apprenticeship Administrator has also made her a key part of the Northern Kentucky FAME Chapter. Brittany works closely with the apprentices at Mubea, KY FAME apprentices and also participates in recruiting activities for both programs.



Jon Dougherty
Director
Apprenticeship Program
Amteck

Holding 94 licenses in the electrical trade area, Jon Dougherty serves as Director of Apprenticeship and Pre-Apprenticeship Programs for Amteck. Established in 1977, Amteck delivers the latest in cutting-edge technology in the electrical contracting industry. Jon joined Amteck in 1993 as an electrician.

He began his current role as Education Manager in 1998. Jon works with as many as 80 apprentices in Kentucky, and adjacent states, providing both training and pre-examination preparation.

Jon currently holds certifications in the following areas:

- Licensed “Inactive” Electrical Inspector for the Commonwealth of KY
- Nationally Certified Electrical Inspector through association with International Association of Electrical Inspectors
- Certified Continued Education Provider for licensed Master Electricians and Electricians in the Commonwealth of KY
- Certified Instructor for ABC
- Approved instructor for IEC



Andrew Farris
Apprentice & Training Manager
Mubea

Drew has over 30 years manufacturing experience with Mubea. In 2001, he left his position as production manager to pursue the opportunity to take on the role of training manager and develop the training department.

In early 2012, Drew led the development of Mubea's own 3 ½ year apprenticeship program with support from Germany. This program was intended to fill positions and support the tool shop being built simultaneously. We were able to do so by utilizing Gateway Community Technical College and Mubea Germany's established traditional apprenticeship program's curriculum.

In addition to his duties with Mubea Drew is the President of the KY FAME-Northern Kentucky chapter, hosting one of the most active AMT Programs in the U.S. Drew has been instrumental in the success of the AMT Program in Northern Kentucky, and continues to be a driver in the development of new programs. He is very passionate about working with people and companies, while passing on knowledge that will enlighten them and make them stronger leaders in their communities. Drew keenly believes that loyalty to your people and your organization will always pay dividends for success.



Rich Gimmel
Chairman & Owner
Atlas Machine & Supply

Rich is chairman and owner of Atlas Machine and Supply, Inc., a 110-year-old fourth-generation family-owned manufacturer and engineering firm specializing in industrial machinery solutions for manufacturers. Atlas is also one of the nation's leading distributors of industrial compressed air systems. The company has 220 employees, mostly machinists, welders, mechanical technicians and engineers.

Prior to his 32-years with Atlas, Rich spent two decades in radio and television news as a reporter, anchor, and news director. He presently volunteers as executive director of the Kentucky Race Track Chaplaincy.

A native of Louisville, he has a BA from Georgetown College and an MBA from Bellarmine University.



Ankur Gopal
Founder & CEO
Interapt LLC

Ankur Gopal, the recipient of the 2016 EY Entrepreneur of the Year Award, was named Kentucky Entrepreneur Hall of Fame's 2014 Emerging Entrepreneur and one of Business First's 40 Business Leaders Under 40. He is a recognized speaker who has addressed audiences at multiple leading conferences, including Salesforce's Dreamforce. Gopal studied Entrepreneurship at The University of Chicago Booth School of Business, has an MIS degree from University of Dayton, and a business degree from University of Illinois. Gopal currently serves on the board of directors for several organizations and is an active entrepreneur mentor, investor, and philanthropist. In his spare time, Ankur is an avid tennis player, enjoys cooking, and spends time with his wife, Dr. Kiran Gill, and their daughter Arya.



**Secretary Hal Heiner
Education & Workforce
Development Cabinet**

Secretary Hal Heiner has firsthand experience in bringing jobs to the Commonwealth. In the private sector, he has had success as both a civil engineer and an industrial real estate developer.

Heiner is a longtime Kentucky resident and has been an active community leader. He has served as a vice chair of Greater Louisville, Inc., and in 2002, he was elected to the Louisville Metro Council where he spent eight years focusing on finding efficiencies in services, government transparency and innovative ways for the community to grow and prosper.

His greatest civic passion has been his leadership roles in numerous educational organizations including Kentuckians Advocating for Reform in Education, the Kentucky Charter Schools Association, Asbury University, Summit Academy and the Christian Academy of Louisville School System.

He now brings those experiences in education, public service and business to his new role as Secretary of Kentucky's Education and Workforce Development Cabinet, where he oversees the work of educating, preparing and training Kentucky's current and future workforce.



Robert I. Lerman
Institute Fellow
Urban Institute &
Professor American
University

Dr. Robert I. Lerman is an Institute Fellow at Urban Institute, Emeritus Professor of Economics at American University, and a Research Fellow at IZA in Bonn, Germany (www.iza.org). Dr. Lerman was one of the first scholars to examine the economic determinants of unwed fatherhood and to propose a youth apprenticeship strategy in the U.S. His published research covers apprenticeship, family structure, inequality, income support, and youth employment and development. Dr. Lerman is one of the leading academic experts on U.S. apprenticeship. His publications on apprenticeship and youth span decades, including “The compelling case for youth apprenticeship” (The Public Interest, 1990), “Are employability skills learned in U.S. youth education and training programs?” (IZA Journal of Labor Policy 2013), “Expanding Apprenticeship Opportunities in the United States” (Brookings Institution), “Restoring Opportunity by Expanding Apprenticeship” (Springer Open, 2016), “Do Firms Benefit from Apprenticeship Investments?” (IZA World of Labor 2014), and “Reinvigorate Apprenticeships in America to Expand Good Jobs and Reduce Inequality” (*Challenge*, 2016). He has testified before several congressional committees and served on the National Academy of Sciences panel on the U.S. post-secondary education and training system. In 2013, Dr. Lerman founded the American Institute for Innovative Apprenticeship (www.innovativeapprenticeship.org). He is a member of the board of the International Network for Innovative Apprenticeship (INAP). Dr. Lerman currently serves as Principal Investigator of the evaluation of the American Apprenticeship Initiative demonstration grants, the evaluation of the Apprenticeship Expansion grants, and a Department of Labor project on building occupational competency frameworks for apprenticeship. He earned an A.B. at Brandeis University and a Ph.D. in economics at MIT.



Dr. Stephen L. Pruitt
Commissioner
Kentucky Department of Education

In September 2015, the Kentucky Board of Education unanimously voted to hire Stephen L. Pruitt as Kentucky's sixth commissioner of education.

Commissioner Pruitt came to Kentucky with an extensive background in education at the local, state and national levels, and he currently serves on the Board of Directors for the national Council for Chief State School Officers.

Pruitt started his education career as a high school chemistry teacher in Fayetteville and Tyrone, Georgia. He later served as the science and mathematics program manager and director of academic standards with the Georgia Department of Education. Subsequently, he was named associate state superintendent for assessment and accountability and ultimately chief of staff for the Georgia Department of Education.

Before coming to Kentucky, Pruitt served as senior vice president for Achieve, Inc., a national, nonpartisan, nonprofit education reform organization based in Washington, D.C. During his tenure with Achieve, he coordinated the development of the Next Generation Science Standards.

Pruitt also served as president of the Council of State Science Supervisors and a member of the writing team for the College Board Standards for College Success (Science). In addition, he served on the National Academies of Science Committee on Conceptual Framework for New Science Education Standards which developed the Framework for K-12 Science Education – a foundational document for the Next Generation Science Standards.

A native of Georgia, Commissioner Pruitt holds a bachelor's degree in chemistry from North Georgia College and State University, a master's degree in science education from the University of West Georgia and a Doctorate of Philosophy in chemistry education from Auburn University.



Christian Ralston
Director, Workforce Development
Norton Healthcare

Christy Ralston is the Director, Workforce Development for Norton Healthcare. Ralston drives the strategic initiatives in workforce planning and forecasting as well as the daily operations of the career center and educational assistance programs for the organization. Ralston serves on the Point Oversight Committee for Kentuckiana Works, the workforce investment board. The Mayor's SummerWorks Advisory Board and is a champion for the program. Ralston is a member of the Health Careers Collaborative of Greater Louisville and oversees the strategic work of the workforce sub-committees for the organization. She serves the board for the Kentucky Nurses Association, Co-Chair of the Kentucky Nurses Association, River City Chapter, and Consultant for the Kentucky Student Nurses association. Prior to Norton Healthcare, Ralston worked as a registered nurse in critical care, clinical research, regulatory affairs and research compliance.



SECRETARY DERRICK RAMSEY

The career path of Derrick Ramsey is one that personifies leadership most notably as an All-American football player, nationally-recognized athletic director, and his service to public office here in the Commonwealth.

While these accomplishments over the last 40 years have occurred in various arenas, Ramsey's commitment to success and gift for building consensus along the way has remained a cornerstone of his legacy at each stop.

In 1975, Ramsey would become the first African-American starting quarterback in the University of Kentucky's history. Two years later, he would not only lead the Wildcats to a 10-1 season at the helm, but also rack up numerous personal accolades including first team All-Southeastern Conference and third-team All-American.

After a successful nine-year NFL career including winning a 1981 Super Bowl ring, he would soon become a small business owner managing real estate and personal investment portfolios. This time away from the gridiron also gave him the opportunity to complete his undergraduate degree and go on to obtain his Master's Degree in Sports Administration from Eastern Kentucky University.

In 1994, Ramsey would return to his alma mater to become a Community Relations Officer at the University of Kentucky. In this role, he successfully brought together members in the African-American community of Lexington together with the university where he helped foster a growing partnership. Five years later, he would become the Athletics Director at Kentucky State University. Here, he went to work on improving the university's facilities including planning, coordination and implementation of a 5,000 square foot academic, fitness and weight training center for student-athletes. Through the creation of an innovative Student Athlete Excellence in Academics Program, he even helped the athletic department produce more Presidential Scholars than any other department on campus.

In 2004, he began his first stint in a state government role when he was appointed Deputy Secretary of Commerce in the Governor Fletcher Administration. While here, he oversaw a 50 million dollar budget and helped manage human resources for the cabinet. During his tenure, Ramsey was also a part of a delegation that successfully brought the renowned 2010 World Equestrian Games to Kentucky.

Soon after leaving office, Ramsey began serving as the Director of Athletics at Coppin State University in Baltimore in 2008. During his seven years in this role, he would lead the department to unprecedented heights of accomplishment for the university, including routinely posting department-wide 3.0 grade-point averages and steadily increasing graduation success rates.

In December of last year, newly-elected Kentucky Governor Matt Bevin called on Ramsey's proven track record on leadership by asking him to once again serve the citizens of the Commonwealth, this time as Secretary of the Kentucky Labor Cabinet. Upon appointment to his current role today, Governor Bevin was eager to praise his distinguished career, saying: "He has been successful in many arenas – both on and off the field. His passion for excellence and his superior management skills will be critical to his success in this new role. He will be a staunch advocate for Kentucky's workers and an integral member of our team."



Michelle Sager
Economic Opportunity Division
National Governors Association

Michelle Sager serves as director for the National Governors Association (NGA) Center for Best Practices Economic Opportunity Division. Sager works with the center’s team and their stakeholders to assess and identify policy solutions for governors and their staff. Sager's directs the division's work across issue areas including economic development, human services, postsecondary education, and workforce development.

Prior to NGA, Sager served as a director for strategic issues at the U.S. Government Accountability Office (GAO). During her GAO career, Sager’s portfolio spanned a broad range of issues central to states, including crosscutting intergovernmental, budget, regulatory, higher education, and international trade issues. As a GAO senior executive, her reports, congressional testimony, briefings, podcasts, media appearances, and public presentations highlighted opportunities to increase the effectiveness and efficiency of federal funds, programs and strategies for achieving results, especially in conjunction with state and local partners. Sager also served as an internal consultant on applied research and methodology, as a member of GAO’s adjunct faculty, directed an agency-wide project management initiative, and directed the team that developed the 2017-2022 Strategic Plan for GAO’s international organization, the International Organization for Supreme Audit Institutions (INTOSAI).

In addition to her GAO career, Sager has previously served on the adjunct faculty for George Mason University and Johns Hopkins University, as legislative staff in the Missouri House of Representative and in the U.S. House of Representatives, as a research fellow and instructor at George Mason University, and as a college admission coordinator.

Sager holds a Ph.D. in public policy, a master’s degree in international commerce and policy and a bachelor’s degree in communications and political science.

Vivek K. Sarin

Executive Officer, Kentucky Cabinet for Economic Development

ABOUT VIVEK

Vivek K. Sarin is the Executive Officer of the Kentucky Cabinet for Economic Development. In this newly created role where he is co-leading the Cabinet with Secretary Terry R. Gill, Sarin is focusing on improving and streamlining the Commonwealth's workforce delivery system across multiple Cabinets to ensure that Kentucky offers individuals and businesses a workforce solution that is unsurpassed in the United States.

Sarin also is focusing attention on other operations within the Cabinet including the state's entrepreneurial activities, committed to the notion that small business is the backbone of Kentucky's economy. Sarin himself has started and grown several businesses including a professional services company, a warehousing and logistics company, a manufacturing and engineering company and a Christmas tree farm and nursery.

Sarin holds a degree in business from Indiana University and a master's degree in business administration from Miami University. He also completed the National Minority Supplier Development Council Advanced Management Education Program at Northwestern University.

Sarin has won a variety of awards and accolades, including Business First's "20 People to Know in Manufacturing," "Forty under 40 Leadership Award" and "Fast 50 Award," as well as the Pacemaker Award from the Kentucky Small Business Development Center. He has served, and continues to serve, on a variety of business and civic organizations.

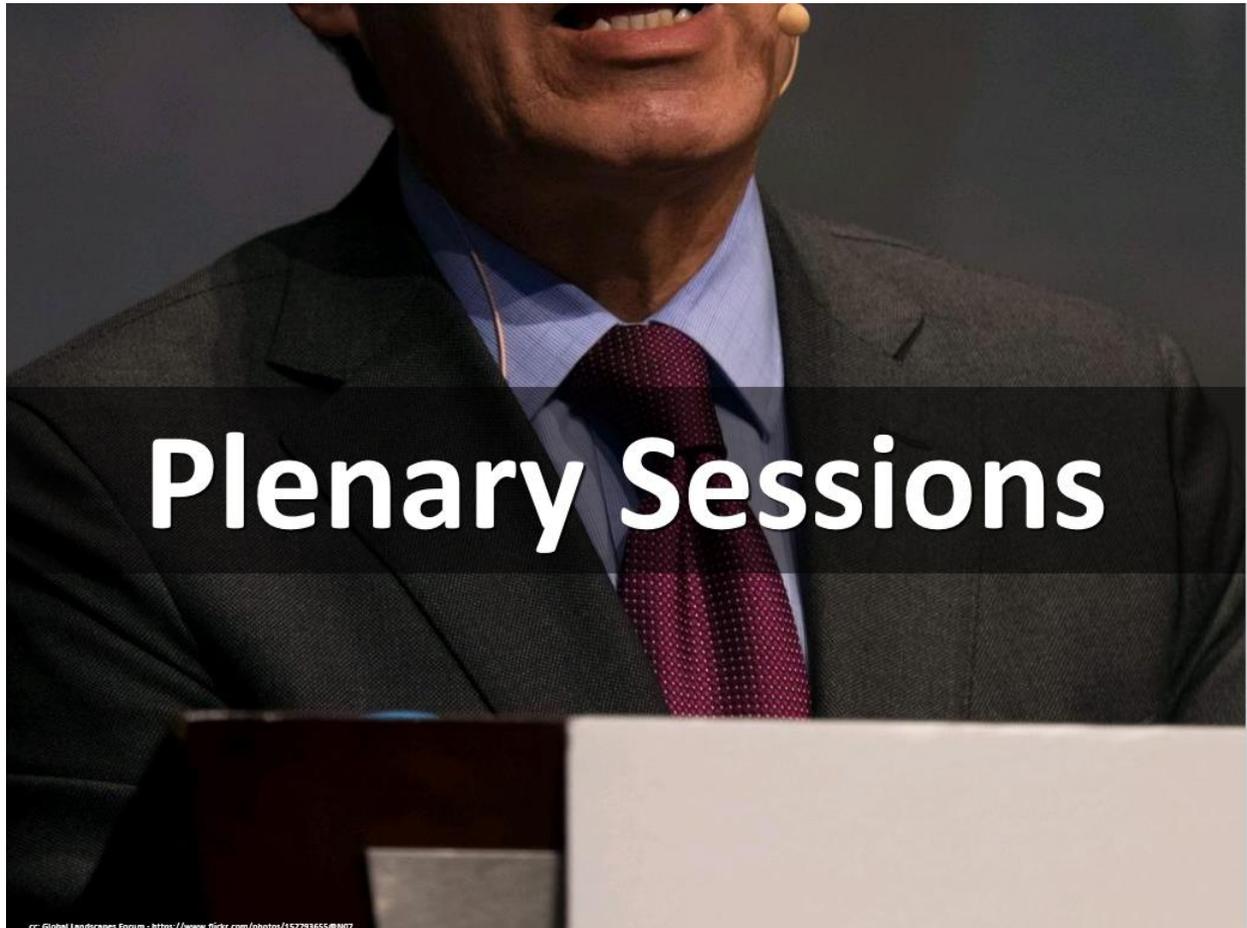
Sarin and his wife, Amy, reside in Louisville, KY and are raising four wonderful children, including 16-year-old triplets.



phone: 502-564-7670

email: vivek.sarin@ky.gov

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Making Business Strong.
Making Life Exceptional.
.....



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Dear Friends:

Welcome to the first annual Summit on Apprenticeships. In the Commonwealth, we recognize the value of apprenticeships as programs that provide career pathways for those just entering the workforce as well as a means to broaden opportunities for those looking to expand their careers.

Kentucky's Labor Cabinet launched the Kentucky Trained, Kentucky Built campaign last fall. Via their newly created Division of Apprenticeships, the cabinet is working closely with private businesses to expand apprenticeships tailored to meet employer needs. Currently, Kentucky has a great deal of momentum and these programs are being created across diverse geographic locations and economic sectors.

For example, in our state we are seeing innovative apprenticeship programs that train individuals for careers ranging from healthcare, to IT, to advanced manufacturing. Employers and labor management organizations now have 181 registered apprenticeship (RA) programs in Kentucky and we expect that number to grow.

The Labor Cabinet has also teamed up with the Cabinet for Justice and Public Safety to create the "Justice to Journeyman" program. This initiative provides inmates and youth a path to earn nationally recognized journeyman credentials in a skilled trade. Giving these individuals a productive path back into society reduces recidivism and enriches our communities.

Our state is enjoying a record breaking year in economic development and the enhancement of our workforce via registered apprenticeships is a key component of that growth. These programs are an integral part of fulfilling our vision of transforming Kentucky into the epicenter of engineering and manufacturing excellence in the United States. It is my hope that this summit will be a productive and educational experience for you. Perhaps you will leave inspired to either launch a registered apprenticeship program or to participate in one as part of your career development.

Sincerely,

Matthew G. Bevin
Governor



Secretary Derrick Ramsey
Registered Apprenticeship



Cabinet Leadership

petejr1961 - <https://www.flickr.com/photos/11967895@N05>

Kentucky Officials Target Economic, Workforce Development on International Trips

Gov. Bevin, Sec. Gill met with business leaders in Japan, Germany and Switzerland

April 2017

Gov. Matt Bevin and other Kentucky officials have been traveling the world this year to bring more business to the commonwealth and to strengthen Kentucky's apprenticeship programs.

Separate delegations visited Japan and Europe in March, visiting with corporate leaders, government officials and trade experts to build upon existing relationships and open the door for new business opportunities.

Gov. Bevin and Cabinet for Economic Development Sec. Terry Gill were among the delegation on the economic development and trade mission to Japan. They met with engineering, manufacturing and technology corporate leaders to discuss the potential growth of existing companies in Kentucky, as well as the prospect of bringing new business to the state.

"No place in America offers a better location for business investment, job creation and future growth than Kentucky," Gov. Bevin said. "We want to ensure that global firms look to the commonwealth first when planning a new or expansion project in the US. Establishing and strengthening our personal relationships

with these business leaders is a major step toward that goal."

Kentucky officials, in partnership with World Trade Center Kentucky, the Japan/America Society of Kentucky, KentuckyUnited and the U.S. Commercial Service, also met with the Japan External Trade Organization (JETRO), US Embassy staff and other local officials during the trip.

"The Kentucky delegation's recent business mission to Japan further strengthened a long and special relationship that the commonwealth has had with many Japanese companies doing business in our state," said Jody Lassiter, president and CEO of the Danville-Boyle County Economic Development Partnership. "Governor Bevin, Secretary Gill and our team sent a clear message that Kentucky wants to build upon that business relationship with new growth opportunities for the benefit of both."

A Model for Apprenticeship

Gov. Bevin and Sec. Gill were joined by Labor Sec. Derrick Ramsey and Education and Workforce Development Sec. Hal Heiner for the apprentice study visit to

Europe. There, the Kentucky delegation met with business leaders and US Embassy officials in Berlin, Germany and Bern, Switzerland.

The trip offered state officials an inside look at the apprenticeship models those countries have implemented to train their workforces and encourage economic development. They also took part in site visits to manufacturing facilities and local schools to learn more about focus provided to health care, advanced manufacturing, the rail industry and technical informatics.



"In our conversations with employers across the commonwealth – whether they be manufacturers, tech-related companies or in the service sector – executives tell us they need more employees who are trained specifically for their company's needs," Sec. Gill said. "We're fortunate to have apprenticeship programs already established in Kentucky and, as part of this trip, we identified best practices and ways to expand our efforts through 'Kentucky Trained. Kentucky Built.' By further partnering with our corporate citizens and educational institutions to keep the Kentucky workforce pipeline trained at world-class levels, we'll meet the needs of individual businesses and grow the state's economy."

One effort to build Kentucky's workforce is the "Kentucky Trained. Kentucky Built." initiative, which launched in September 2016. The program is an effort by the state to recommit new energy and resources toward strengthened apprenticeships across the commonwealth. Currently, Kentucky has more than 2,700 apprentices working in 165 different registered trades across nearly 1,100 employers.

Sec. Heiner said the trip is a step in the right direction to correct Kentucky's workforce issues.

"We are in a workforce crisis in this state, and this mission to Germany and Switzerland offered innovative ideas for creating apprenticeships and other certification programs," Sec. Heiner said.

"Our goal is to better equip our students and adults with the skills needed to fill the great jobs that are open and drive our economy."

The majority of apprenticeship programs in the US last four years and typically range from one to five years in length. Each year of apprenticeship contributes to 2,000 hours of on-the-job training and requires a minimum of 144 hours of related classroom instruction. The Labor Cabinet works with each company to customize a curriculum specific to each employer's needs. Each graduate of the training program receives a nationally recognized certification.

The National Governors Association hosted the Kentucky delegation during the visit.

For more information on the apprenticeships offered in Kentucky, visit www.KentuckyApprenticeship.com.



Robert Lerman

Return on Investment

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Do/can firms benefit from training apprentices?



Apprenticeships offer workers the chance to learn valuable occupational skills. Apprentices earn salaries, receive instruction in relevant concepts, contribute to production, and attain occupational qualifications. For many workers, apprenticeships are far more cost-effective in entering a rewarding career than a pure classroom approach. Employers pay the wages of apprentices, sometimes finance related courses, provide a setting for hands-on learning, and supply trainers to help apprentices achieve competence in the occupation. But, why should profit-seeking firms finance apprenticeships? Human capital theory has long held that firms will only finance firm-specific training; financing general training will be unprofitable because competition will force firms to raise wages in line with the worker's added (general) productivity.

Why, then, do patterns of firm-based occupational training investments vary widely across countries? One common answer is tradition, that firms in countries like Germany and Switzerland see hiring apprentices as a social obligation. But another possibility, one favorable to expanding the role of apprenticeship across countries and industries, is that firms themselves can derive good returns to their investments in apprenticeship. The main reason is that the costs of apprentice wages, trainer salaries, and courses can be mostly or completely recouped during the apprenticeship itself. The apprentice typically contributes to production by undertaking some tasks that would be undertaken by unskilled workers and others by skilled workers. Add in savings on hiring and training costs, reduced turnover costs, improved matches between employer positions and skilled workers, and covering unexpected absences of skilled workers, then firms can gain substantially.

Researchers have estimated the costs and benefits experienced by large numbers of apprenticeship sponsors in several countries. One analysis of 1,825 German firms and 1,471 Swiss firms incorporated apprentice contributions in undertaking tasks normally undertaken by unskilled and skilled workers and the relative productivity of apprentices compared to regular workers. Swiss firms were able to recoup their apprenticeship investments during the apprenticeships while the typical German firm managed to do so by retaining a higher share of apprentices after the training. In both countries, apprentices advanced quickly to skilled tasks. In Switzerland, the productivity of apprentices rises from 37% of a skilled worker's level in the first year to 75% in the third (final) year.

Other studies find significant returns to apprenticeship investments by German, Canadian, and English firms. Nearly 80% of more than 4,000 employers in England and Wales were satisfied with their apprenticeship program; three in four mentioned improved productivity as a primary benefit. Most highlighted product or service improvements, better staff retention, and the introduction of new ideas and innovations. Over 40% of employers reported that apprenticeships helped them win new business. In a 2016 study, 13 US businesses offering apprenticeships all concluded that the benefits of their investments well exceeded their costs. A quantitative analysis of Dartmouth-Hitchcock Health Services and Siemens USA uncovered strikingly high (40-50%) rates of return. Major gains emerged from reduced overtime and turnover and high capacity utilization.

Like all investments, firm-financed apprenticeships can be risky. But well-structured programs recoup most costs quickly and often can generate very high returns.

Related article:

[Do firms benefit from apprenticeship investments, by Robert Lerman](#)

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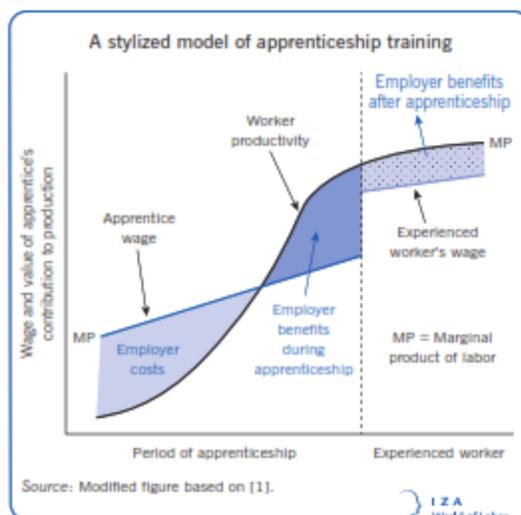
We recognize that IZA World of Labor articles may prompt discussion and possibly controversy. Opinion pieces, such as the one above, capture ideas and debates concisely, and anchor them with real-world examples. Opinions stated here do not necessarily reflect those of the IZA.

Do firms benefit from apprenticeship investments? Why spending on occupational skills can yield economic returns to employers

Keywords: training, skills, apprenticeships

ELEVATOR PITCH

Economists once believed firms do not pay to develop occupational skills that workers could use in other, often competing, firms. Researchers now recognize that most firms benefit from investing in apprenticeship training. Evidence indicates that financial returns to firms vary. Some recoup their investment within the apprenticeship period, while others see their investment pay off only after accounting for reduced turnover, recruitment, and initial training costs. Generally, the first year of apprenticeships involves significant costs, but subsequently, the apprentice's contributions exceed his/her wages and supervisory costs. Most participating firms view apprenticeships as offering certainty that all workers have the same high level of expertise and ensuring a supply of well-trained workers during sudden increases in demand and to fill leadership positions.



KEY FINDINGS

Pros

- ⊕ The apprentice's contribution to production is large enough to offset most costs to firms.
- ⊕ By retaining most apprentices, firms benefit substantially from low recruitment and training costs.
- ⊕ Knowing that all trained apprentices have mastered a common set of skills is valuable to firms.
- ⊕ Apprenticeship training enhances subsequent innovation within the training firm.
- ⊕ Treating apprenticeship expenses as capital investments would improve measured gains.

Cons

- ⊖ Most firms in advanced economies do not offer apprenticeships.
- ⊖ Firms perceive weak returns because they fear trained apprentices will be hired away by other firms.
- ⊖ Some estimates show firms recover only modest parts of their investment during the training period.
- ⊖ Quantitative estimates of gains for employers are uncertain, based on only a few studies.
- ⊖ It is difficult for firms to assess the long-term benefits of apprenticeship investments.

AUTHOR'S MAIN MESSAGE

Apprenticeship training is usually a profitable investment for firms as well as workers. Often, firms can recoup all or most of their costs within the apprenticeship period. By providing firms with information on economic returns, by helping them set up apprenticeships, and by funding off-site training, policymakers can promote the expansion of effective career training and increased worker earnings with only modest public expenditures.

MOTIVATION

Policymakers are searching for ways to deal with the erosion of middle-class jobs and a level of youth joblessness that has reached a post-1950s high. The International Labour Organization sees a worsening youth employment crisis that could lead to a “scarred” generation facing long periods of unemployment and weak earnings prospects. The Organisation for Economic Co-operation and Development (OECD) considers youth unemployment in developed economies severe enough to require government subsidies for hiring.

Meanwhile, the earnings of workers in middle-wage occupations have been declining relative to low-wage and high-wage employment in many advanced economies. Yet employers in a variety of industries are complaining about a mismatch between the skills that they want and the skills that job applicants actually possess. Given the success that countries with robust apprenticeship systems have had in reducing youth unemployment, raising the status of middle-wage jobs, and limiting skill shortages, the OECD and the EU have called for major expansions of these programs. This paper examines one barrier to this expansion (the perceived high net costs to firms) and offers empirical evidence that firms typically reap positive net benefits from well-structured apprenticeship programs (see **Variations in scope and scale of apprenticeships**).

Apprenticeship

A program of courses, work-based learning, and productive employment in which workers achieve occupational mastery and industry-recognized credentials. Unlike school-based vocational education, apprenticeships involve extensive work-based learning and practice; real jobs involving production, pay, and the discipline of work; and close mentoring by professionals. Unlike on-the-job training contracts, apprenticeships include related courses and the development of occupational mastery, not simply the ability to do a particular job.

Variations in scope and scale of apprenticeships

Apprenticeship systems vary widely across countries. In Austria, Denmark, Germany, and Switzerland, 45–70% of 16–19 year-olds participate in apprenticeships as part of a dual education system that combines work-based with school-based learning. Apprentices make up nearly 4% of the workforce in these countries and in Australia, where apprenticeships have quadrupled in recent decades. England is rapidly catching up, with apprenticeships increasing threefold and incorporating occupations in business, banking, and the creative arts. Belgium, France, and the US are among the countries with very small apprenticeship systems and with little penetration into occupations outside construction and manufacturing.

DISCUSSION OF PROS AND CONS

Theories related to apprenticeship training

Like investments in plant and equipment, increasing workers’ skills requires spending today to generate a flow of returns of enhanced productivity in the future. While

additional firm-specific skills raise a worker's productivity only within the firm that provides the training, additional general skills can increase productivity in a range of firms. Labor economists have theorized that firms are likely to pay only to develop workers' specific skills, since the gains from general skills will accrue to the worker through higher wages from the training firm or some other firm.

Amendments to this theory, however, suggest that employers do have an incentive to finance general training. Partly, this is because it is costly for workers to quit and for employers to replace them. Also, firms providing the training know more than other firms about the content and value of training and how well individual workers have absorbed the knowledge. Furthermore, specific and general skills are often complementary: The more general skills a worker possesses (including occupational skills), the more productive that worker is likely to be after acquiring firm-specific skills.

Skills rarely raise productivity in isolation, however. Increases in productivity typically result when workers use their skills to complement the work of others within the organization. Economic theories have offered useful conceptual frameworks, but determining whether firms actually benefit from apprenticeship investments requires empirical estimates.

Costs and benefits to firms

Employers' net costs depend on a variety of factors:

- the mix of classroom and work-based training provided;
- occupation;
- skill;
- wage progression; and
- the productivity of the apprentice while learning to master the required skill [2].

Direct costs include apprentice wages, the wages of trainer specialists for the time they oversee apprentices, and the costs of materials and additional space required for the apprenticeship. The benefits depend on the extent to which the apprenticeship saves on subsequent hiring and training costs, lowers turnover costs, and enhances productivity more than added wage costs [1].

Also valuable is employers' increased certainty that apprenticeship graduates know all the relevant occupational and firm-specific skills, and can work well alongside other skilled workers. In addition, having extra well-trained workers, such as apprentice graduates, provides firms with valuable options for expanding production without reducing quality in response to uncertain demand shocks, and for covering unexpected absences of skilled workers [2]. The high level of occupational mastery achieved by apprentices may also increase the pace of innovation and the ease of implementing new technologies.

It would take years, if not decades, to track all the costs and benefits of apprenticeships in a large sample of employers and countries. Studies have not been able to quantify all the benefits that accrue to employers for many years after the apprenticeship.

But several studies estimate the net costs and benefits during and soon after the apprenticeships.

Estimated net costs of apprenticeships differ greatly

The most extensive studies of the net costs of apprenticeship programs have focused on German and Swiss firms. An analysis of data from surveys of 1,825 German firms and 1,471 Swiss firms identifies the wages of trainers and the wages of apprentices as the main gross costs of apprenticeship programs borne by employers [3]. The study offers details on the wages of management and training personnel, wages of regular skilled and unskilled workers, wage costs of apprentices, time at the workplace, share of apprentices' workplace time devoted to tasks normally undertaken by unskilled and skilled workers, and the relative productivity of apprentices compared with regular workers.

Apprenticeships differ greatly in costs as well as in the share of salaries offset by their contribution to production. On average, the gross costs per annum amounted to €15,500 for German firms and about €18,000 for Swiss firms. Although Swiss firms spend more than German firms, they derive substantially higher benefits from the value added by apprentices. Swiss firms gain more than €19,000 a year, more than double the €8,000 in benefits that German firms attribute to the value of production generated by apprentices. For a three-year apprenticeship, Swiss firms are thus able to recoup the €54,400 cost with benefits of €57,100, while German firms experience a €46,600 cost but realize only €24,000 in benefits [4].

Why do Swiss firms—where the wages of management, skilled, and unskilled workers, and even apprentices are generally higher than in German firms—show a small net benefit, while for the average German firm costs exceed benefits? Higher Swiss costs are offset by substantially higher returns for several reasons. First, apprentices are at work for more days in Switzerland than in Germany [4]. Over the course of a three-year apprenticeship, Swiss apprentices are at work an average of 468 days, compared with 415 for their German counterparts. Second, when in the workplaces, Swiss apprentices devote an average of 83% of their time to productive tasks, compared with only 57% for German apprentices, who engage more in practicing tasks and in coursework [3], [4]. Third, the differences in time spent on tasks with no direct value to the firm are substantial. In Switzerland, apprentices allocate only 13–21% of their time on these tasks, while in Germany these tasks take up 31–57% of the time [2].

One striking feature of apprenticeship programs in both countries is how quickly apprentices advance through their training and move from unskilled to skilled tasks. In Switzerland, the productivity of apprentices rises from 37% of a skilled worker's level in the first year to 75% in the third (final) year [3]. The increase in Germany is just as rapid, increasing from 30% to 68% of a skilled worker's productivity over the apprenticeship period [3]. Thus, in both countries, apprentices accumulate substantial and similar levels of human capital. Still, nearly all German firms with apprenticeships (93%) incur net costs, while a majority of Swiss firms (60%) more than recoup their costs [4].

Are the higher in-program net costs to German firms offset by any advantages after the apprenticeship period? Apparently yes, at least for one key outcome—the retention

of apprentices within the firm. In Switzerland, only about 36% of apprentices remain with the firm that provided the apprenticeship training. In the former West Germany, the corresponding figure was 64% [4]. Thus, while German firms bear much higher net costs than Swiss firms during the apprenticeship period, they are more likely to recoup these costs over time by retaining the workers they have trained. One reason for this is the higher degree of regulation in Germany than in Switzerland [5]. German unions are stronger, laying off workers is more difficult, and German works councils do more to influence the training of young workers.

Still, not all recent studies indicate that German firms actually experience higher net costs for their apprenticeship investments. For example, one study finds that, for many occupations, the gains to German firms during the apprenticeship period more than offset the costs [5]. That conclusion is drawn by estimating the impact of apprenticeships on company profits. For apprenticeships in trade, commercial, craft, and construction occupations, these estimates show a positive impact on profits. However, in manufacturing, the effect on current profits is negative, indicating a positive net cost [2].

Another careful study of apprenticeships in a sample of 100 German firms also finds that the majority of firms recoup their investments during the training period [6]. This study used a tool called QEK (for “quality, returns, and costs”) that allowed employers to make a detailed assessment of the costs and benefits of apprenticeship during the training period. QEK records gross costs based on an approach used by the Federal Institute for Vocational Education. The costs include staff costs of trainees, training allowances, social security contributions, the wages of full-time and part-time trainers, the cost of space and materials, certification fees, and administrative costs.

According to the study, most firms experience low net costs or even net benefits from sponsoring apprenticeships. However, the net costs vary widely, some firms gaining more than €10,000 and others experiencing net costs. Somewhat surprisingly, net costs are inversely related to the quality of the apprenticeship. High-quality apprenticeships have higher gross costs, but they are also much more likely to help employers recoup their investment during the training period [6].

Older studies were considerably less optimistic about the net costs of apprenticeship investments in Germany. According to one, an apprentice’s contribution to production accounted for only about 40% of company expenditures on training [7]. Moreover, the direct post-program benefits may not be high enough for the employer to recoup its investments. Although this study is worth noting, more recent and in-depth analyses indicate larger productivity contributions by apprentices—especially in the period following the apprenticeship.

Detailed estimates of gains to employers from apprenticeship investments are less common outside Germany and Switzerland. An extensive study of Canadian employers sponsored by the Canadian Apprenticeship Forum (2006) estimated employer costs and benefits of apprenticeships in 15 occupations [8]. The study drew on responses from 433 employers, with at least 16 per occupation. All were four-year apprenticeships. The average gross costs ranged from about C\$78,000 for cooks to C\$275,000 for construction electricians. Average in-program benefits—measured as the revenue generated by the apprentices—varied widely as well, ranging from C\$120,000 for cooks to C\$338,000 for construction electricians. For all 15 occupations, employers earned

a positive return on their apprenticeship investments during the training period. The average benefit was 1.38 times the average cost. Any post-program benefits would add to the economic returns.

A recent analysis of apprenticeships in the UK examined the returns to eight employers in each of four industries—engineering, construction, retail, and business administration [1]. Training ranged from 18 months for basic credentials to two to four years for advanced apprenticeship programs. Average gross costs were higher than the average benefits during the apprenticeship period in all four industries, magnitudes varying widely by industry. Apprenticeships were most costly in engineering and construction despite the fact that the productive contributions of the apprentices covered were worth about 50% of a fully qualified worker's wage. The dollar value of an apprentice's contribution to output is high but so are their wages. Still, the authors estimate that employers in all four industries at least break even and begin earning positive returns during the early post-apprenticeship period, partly because the productive contributions of apprenticeship graduates were worth more than their wages at the time and partly because of lower recruitment and training costs [2].

A study of 60 employers in Australia in 1998–1999 found that net costs over a four-year apprenticeship were nearly 1.4 times the benefits [9]. However, net costs declined sharply over time: By the fourth year, the benefits exceeded costs. Although this analysis did not estimate the post-apprenticeship benefits that accrued to employers, the trend in productivity growth suggests that employers might have reached a break-even point by the sixth or seventh year, after factoring in reduced recruitment and training costs.

In summary, studies of the net costs to firms during the apprenticeship period indicate wide variations across countries, occupations, and time. Central to firms' ability to recoup most or all of their training costs is the amount of time apprentices spend in directly productive activities. Swiss firms are particularly effective at combining major investments in apprenticeship training with extensive use of apprentices in production. Given such low net costs (or even small net benefits), apprenticeships can be valuable to firms even if they retain only half or fewer of the graduates. As a result, most firms view their investments in apprenticeship programs as critical to their long-term success in producing high-quality goods and services.

Estimating the post-training benefits of apprenticeships

The post-training benefits of apprenticeship programs are especially important, but they are not easy to quantify. They include:

- reduced recruitment costs;
- training related to the company's specific procedures; and
- enhanced wage stability (because outside hires can upset the relative wage balance).

Firms report that another advantage of apprenticeships is the "option value" of having extra well-trained workers. In a world of uncertainty about levels of production and irreversible investments in certain workers, firms that invest in apprenticeship training create "real options." When workers complete their training, firms have the option—but

not the obligation—to hire some or all of the trained workers. Having additional well-trained workers with a range of skills allows firms to deal with unexpected increases in demand or losses of other experienced workers. Although difficult to quantify, the value of these options raises a firm's return on apprenticeship investments.

A survey of German employers offers some insight into post-program benefits [10]. Savings in recruitment and training costs averaged nearly €6,000 for each skilled worker trained in an apprenticeship and taken on permanently. Other benefits include reduced errors in placing employees, avoiding excessive costs when the demand for skilled workers cannot be quickly filled, and performance advantages favoring internally trained workers who understand company processes over skilled workers recruited from the job market. Taking all of these benefits into account appears to make apprenticeship investments a net gain for employers [2].

Another benefit to firms rarely captured in studies is the positive impact of apprenticeships on innovation. Innovations are critical to success in a competitive environment. Well-trained workers are more likely to understand the complexities of a firm's production processes, and therefore identify and implement technological improvements, especially incremental innovations to improve existing products and processes. A study of German establishments documented this connection and found a clear relationship between the extent of in-company training and subsequent innovation [11].

Reports by apprenticeship-sponsoring firms are revealing, even if they do not provide rigorous evidence of economic returns. In the US, evidence from surveys of more than 900 employers indicates that the overwhelming majority of them believe their programs are valuable and involve net gains [12]. Nearly all sponsors reported that the apprenticeship program helps them meet their skill demands. Other benefits of apprenticeships include reliably documenting appropriate skills, raising worker productivity, increasing worker morale, and reducing safety problems. Only 5–8% of surveyed firms did not find these benefits of apprenticeships to be important.

Nearly 87% of sponsors reported that they would strongly recommend registered apprenticeships, and another 11% would recommend apprenticeships with some reservations. Only 2–3% said they would not recommend apprenticeships. Surprisingly, only one in four employers regarded “poaching”—in which non-training firms hire apprentice graduates away from the firms that trained them—as a serious problem. Even among the firms most concerned about poaching, 85% still highly recommend apprenticeships.

Employer expressions of support for apprenticeships are therefore quite common. Especially striking are the positive attitudes of employers that have recently adopted apprenticeship training programs. England and Wales are particularly interesting in this regard because of the large increase in the number of firms there that now offer apprenticeships (well over 100,000). A study of more than 4,000 employers found that nearly 80% were satisfied with their apprenticeship program, while only 6% were dissatisfied.

Nearly three in four employers mentioned improved productivity as a primary benefit, with most highlighting other outcomes likely to improve profitability, product, or service improvements; better staff retention; and the introduction of new ideas and

innovations. More than 40% of employers reported that apprenticeships helped them win new business. About 80% of employers reported that they expect to continue offering apprenticeships, and another 11% are considering doing so but are not certain.

Accounting practices and gains from apprenticeships

Managers often assert that the skills and commitment of their employees are their companies' most valuable assets. At the same time, they say that they can only manage what they can measure [13]. Because human capital investments are not treated the same as physical investments on company balance sheets, managers may underestimate the gains from investing in apprenticeships. All of the spending on skill development is a cost in the current year, although the company will potentially gain benefits from these expenses over several years [13].

If investments in training were treated more closely in line with economic reality for measuring profits and assets (but not for tax purposes), the contributions of these investments would be measured more precisely and the benefits would become more apparent [13]. Training investments should count as assets only to the extent that they yield a flow of future benefits to the company. The fact that companies are currently willing to finance an extensive amount of training is almost certainly an indication of their ability to capture some of the gains [13].

LIMITATIONS AND GAPS

Many firms are able to recoup most or all of the gross costs of apprenticeship training during the training period itself. Providing occupational training that is valuable outside the firm appears inconsistent with human capital theory's expectation that firms will pay only for specific training valuable to that firm. However, because firms recoup most of the investment within the training period, the net costs of this general training are often low, if not zero. Firms that make positive net investments capture their returns in the early post-apprenticeship period.

The quantitative estimates and qualitative reports come from employers that train or have trained apprentices. Whether these returns on apprenticeship investments would apply to firms not currently undertaking apprenticeship training is an open question. A demonstration that randomly encourages some but not other firms to use apprenticeship training would help answer that question. Other evidence can be garnered from countries in which substantial numbers of firms have recently adopted apprenticeships.

SUMMARY AND POLICY ADVICE

Countries with robust apprenticeship systems are showing by example how education and training can keep youth unemployment low and enhance the quality of jobs that do not require baccalaureate degrees. International organizations are increasingly calling on other countries to expand apprenticeship programs. But will enough employers find it in their interest to offer such programs? A common argument is that by not offering apprenticeships, firms are signaling that they do not view them as economically beneficial.

Alternatively, employers may simply lack institutional support and knowledge about how apprenticeship programs can increase profitability. After all, in countries with major initiatives to help firms understand and start programs (such as Australia and England), apprenticeship programs have expanded rapidly.

Since apprenticeship training is highly effective for workers and yields external benefits that cannot be captured by the firm, it makes sense to use public resources to stimulate apprenticeships. In many countries, reallocating funding from school-based vocational programs to apprenticeship programs that emphasize work-based learning can lower the costs per worker and increase the quality and relevance of training.

While an international consensus favors expanding apprenticeships, the major policy question is this: How can countries develop and sustain large-scale apprenticeship training? Attracting workers to take advantage of existing apprenticeship opportunities is rarely a serious problem. So the question becomes: How can policies stimulate employers to increase the overall number of apprenticeships?

In countries with limited programs, government and industry leaders need to campaign at the local and national level to encourage public support for apprenticeship programs. Success requires an effective “retail” sales and technical support effort. Staff of the government office or the intermediary organization that is marketing apprenticeship must convince firms that apprenticeships are good for business and must teach most businesses how to build an apprenticeship program. Once employers begin to adopt apprenticeship, they will likely continue to do so, thereby providing post-secondary training and education at a modest cost.

England’s recent success in expanding apprenticeships demonstrates the feasibility of this approach. Apprenticeship starts jumped to more than 500,000 by 2012–2013, a fivefold increase from 1999 levels and more than double those of 2007. In England, apprenticeship is becoming a mainstream option for workers and a common practice for firms. In the US, South Carolina’s Apprenticeship Carolina initiative has also succeeded, being marketed at the state and individual firm levels, helped along by a small tax credit. Since 2007, South Carolina companies using apprenticeship increased from 90 to over 660, even as the Great Recession led to job losses between 2007 and 2012.

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Competing interests

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these principles.

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The full reference list for this article is available from the IZA World of Labor website (<http://wol.iza.org/articles/do-firms-benefit-from-apprenticeship-investments>).

Chapter 10

Restoring Opportunity by Expanding Apprenticeship

Robert I. Lerman

Abstract Restoring opportunity requires jobs that can generate middle class incomes. Notwithstanding concerns about the declining share of middle-wage jobs, this chapter argues that building a robust apprenticeship system in the U.S. can sharply increase earnings and the share of American workers entering rewarding careers. By emphasizing “learning by doing” as a paid employee, apprenticeships are especially effective in preparing workers to gain a valued occupational qualification. They enhance youth development by providing a more engaging experience than schooling does and by linking young people to mentors. They encourage employers to upgrade jobs and develop job ladders. Apprenticeships currently represent a much smaller share of the workforce in the U.S. than in most other advanced countries. This chapter contends that expanding apprenticeship is feasible and a highly cost-effective strategy for restoring opportunity.

Keywords Apprenticeship • Labor market • High-skill jobs • Middle-skill jobs • Low-skill jobs • Job training • Unemployment • Wages • Occupations • Community colleges • Career academies • Career and technical education (CTE) • Licensing • Certification

Introduction

Central to concerns about opportunity in America is the erosion of middle class jobs. Economist David Autor (2010) highlights the polarization in the U.S. labor market, with computerization eliminating middle-skill jobs while shifting low-skill workers into poorly paid and difficult-to-automate service professions.

R.I. Lerman (✉)
Urban Institute, Washington, DC, USA
American University, Washington, DC, USA
IZA, Bonn, Germany

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A *Financial Times* report¹ on the United Kingdom found that, “Jobs are being created at the top and bottom of the skills scale, while those in the middle tier—including office administrators and blue-collar process operators—are losing out. The trend is intensifying the ‘hour glass economy,’ where new technologies increase low-skilled jobs but eliminate many in the middle that require intermediate skills.” High youth unemployment rates in the U.S. and especially in Europe exacerbate these trends by keeping many workers from gaining initial work experience. According to *The Economist*, rapid technological change is lowering the costs of replacing workers with robots and wages are stagnating even as economic growth has resumed.²

Opportunity is becoming increasingly difficult to sustain in the context of widening educational divides that increase the supply of workers without a college education who need jobs. Although rates of high school graduation have increased in general, including for less advantaged groups, the majority of all workers and the vast majority of young minority male workers leave school without any qualification beyond high school. Low proficiency in literacy and numeracy is the norm for high school graduates (with no college), according to data from the Organisation for Economic Co-operation and Development’s (OECD) Programme for the Assessment of Adult Competencies (PIAAC) (Holzer and Lerman 2015). The vast majority of high school graduates attend college, but as of 2014, only about 46 % of 25- to 34-year-old Americans had achieved an associate’s (A.A.) or bachelor’s (B.A.) degree. Young men, especially minority men, are particularly at risk, with only a modest share graduating either a two- or four-year college. Among 25- to 34-year-olds, 29 % of African-American and 19 % of Hispanic men had attained an A.A. or B.A. degree as of March 2014.³

The lack of work experience among youth is another major concern. Only one in three Black 18- to 22-year-old men held a job in March 2014; more than half had no work experience at all in 2013. Because work experience contributes substantially to career success, the high rates of joblessness of young people can weaken their long-term opportunities.

Are these trends inevitable and impervious to policy? Or can wise skill development approaches help engage young people and expand their job opportunities, partly by preserving middle class jobs? This chapter considers the potential of robust apprenticeship systems for increasing opportunity by raising skills, productivity, and wages, thereby increasing the chances for young people to find and hold jobs providing middle class incomes.

¹Weitzman, Hal, and Robin Harding. “Skills Gap Hobbles US Employers.” *Financial Times*, December 13, 2011.

²“The Economics of Low Wages: When What Goes Down Doesn’t Go Up.” *Economist*, May 2, 2015.

³These figures come from the author’s tabulations of the March 2014 Current Population Survey (CPS). The estimates may overstate the share of Black men with high levels of education as the data exclude men in jail or prison. In addition, the CPS is likely to undercount Black men just as the decennial census does, and these men probably have lower levels of education than men counted in the CPS.

The chapter begins by defining apprenticeship and describing why apprenticeship should be a central component of the nation's approach to preparing people for careers. Next, we consider whether apprenticeships, or any training, can restore opportunity in the context of a hollowing out of the middle of the distribution of jobs. Specifically, we describe skill requirements and alternative approaches to preparing and upgrading the skills of individuals for these occupations. Programs of academic education and apprenticeship programs emphasizing work-based learning have often competed for the same space, but the full picture reveals they can complement each other significantly. Then, we show how apprenticeship can affect the demand side of the market, encouraging firms to transform jobs into high-skill career positions. We consider the evidence on the costs and effectiveness of apprenticeship training in several countries. Of particular interest is the evidence on the impacts of apprenticeship on firms and new findings on whether apprenticeship training locks workers into specific occupations and limits their occupational mobility. The analysis examines the costs and benefits of apprenticeship versus school-based alternatives aimed at preparing young people for careers. We go on to discuss recent policy developments in the United States and the implications for the feasibility of expanding apprenticeship. The concluding section answers the question on the role of apprenticeship systems in rebuilding middle class jobs.

Defining Apprenticeship and Explaining Its Advantages

Apprenticeship training is a highly developed system for raising the skills and productivity of workers in a wide range of occupations, with demonstrated success abroad and scattered examples of success domestically. Apprentices are employees who have formal agreements with employers to carry out a recognized program of work-based and classroom learning as well as a wage schedule that includes increases over the apprenticeship period. Apprenticeship prepares workers to master occupational skills and achieve career success. Under apprenticeship programs, individuals undertake productive work for their employer; earn a salary; receive training primarily through supervised, work-based learning; and take academic instruction that is related to the apprenticeship occupation. The programs generally last from 2 to 4 years. Apprenticeship helps workers to master not only relevant occupational skills but also other work-related skills, including communication, problem solving, allocating resources, and dealing with supervisors and a diverse set of co-workers. The course work is generally equivalent to at least 1 year of community college.

In Austria, Germany, and Switzerland, extensive apprenticeships offer a way of upgrading the quality of jobs, especially in manufacturing, commercial, and managerial positions.⁴ In these countries, apprenticeships begin mostly in the late high

⁴ For a list of occupations using apprenticeships in several countries, see the occupational standards section of the American Institute for Innovative Apprenticeship website at www.innovativeapprenticeship.org

school years, absorbing 50–70 % of young people on their way to valued occupational qualifications (Hoffman 2011). OECD reports (2009, 2010) highlight the role of a robust apprenticeship system in limiting youth unemployment.

Apprenticeships within the U.S. and elsewhere show how construction occupations can reach high wages and high productivity. The question is whether the model can be extended and attract firms to upgrade other occupations. Apprenticeship expansion holds the possibility of substantially improving skills and careers of a broad segment of the U.S. workforce. Completing apprenticeship training yields a recognized and valued credential attesting to mastery of skill required in the relevant occupation.

Apprenticeships are a useful tool for enhancing youth development. Unlike the normal part-time jobs of high school and college students, apprenticeships integrate what young people learn on the job and in the classroom. Young people work with natural adult mentors who offer guidance but allow youth to make their own mistakes (Halpern 2009). Youth see themselves judged by the established standards of a discipline, including deadlines and the genuine constraints and unexpected difficulties that arise in the profession. Mentors and other supervisors not only teach young people occupational and employability skills but also offer encouragement and guidance, provide immediate feedback on performance, and impose discipline. In most apprenticeships, poor grades in related academic courses can force the apprentice to withdraw from the program. Unlike community colleges or high schools, where one counselor must guide hundreds of students, each mentor deals with only a few apprentices.

Apprenticeships are distinctive in enhancing both the worker supply side and the employer demand side of the labor market. On the supply side, the financial gains to apprenticeships are strikingly high. U.S. studies indicate that apprentices do not have to sacrifice earnings during their education and training and that their long-term earnings benefits exceed the gains they would have accumulated after graduating from community college (Hollenbeck 2008). The latest reports from the state of Washington show that the gains in earnings from various education and training programs far surpassed the gains to all other alternatives (Washington State Workforce Training and Education Coordinating Board 2014). A broad study of apprenticeship in 10 U.S. states also documents large and statistically significant earnings gains from participating in apprenticeship (Reed et al. 2012).

These results are consistent with many studies of apprenticeship training in Europe, showing high rates of return to workers. One recent study managed to overcome the obstacle that such studies tend to face where unmeasured attributes explain both who is selected for an apprenticeship and how well apprentices do in the labor market (Fersterer et al. 2008); the authors did so by examining how an event unrelated to the apprenticeship (the firm staying in or going out of business) caused some apprentices to have full apprenticeships while others found their apprenticeships cut short. The estimates indicated that apprenticeship training raises wages by about 4 % per year of apprenticeship training. For a three- to four-year apprenticeship,

post-apprenticeship wages ended up 12–16 % higher than they otherwise would be. Because the worker's costs of participating in an apprenticeship are often minimal, the Austrian study indicated high overall benefits relative to modest costs.

On the demand side, employers can feel comfortable upgrading their jobs, knowing that their apprenticeship programs will ensure an adequate supply of well-trained workers. Firms reap several advantages from their apprenticeship investments. They save significant sums in recruitment and training costs, reduced errors in placing employees, avoiding excessive costs when the demand for skilled workers cannot be quickly filled, and knowing that all employees are well versed with company procedures. Because employers achieve positive returns to their investments in apprenticeship, the worker and the government can save significantly relative to conventional education and training. After reviewing several empirical studies, Muehlmann and Wolter (2014) conclude that "...in a well-functioning apprenticeship training system, a large share of training firms can recoup their training investments by the end of the training period. As training firms often succeed in retaining the most suitable apprentices, offering apprenticeships is an attractive strategy to recruit their future skilled work force..."

One benefit to firms rarely captured in studies is the positive impact of apprenticeships on innovation. Well-trained workers are more likely to understand the complexities of a firm's production processes and therefore identify and implement technological improvements, especially incremental innovations to improve existing products and processes. A study of German establishments documented this connection and found a clear relationship between the extent of in-company training and subsequent innovation (Bauernschuster et al. 2009). Noneconomic outcomes are difficult to quantify, but evidence from Europe suggests that vocational education and training in general is linked to higher confidence and self-esteem, improved health, higher citizen participation, and higher job satisfaction (Cedefop 2011). These relationships hold even after controlling for income.

In the United States, evidence from surveys of more than 900 employers indicates that the overwhelming majority believe their programs are valuable and involve net gains (Lerman et al. 2009). Nearly all sponsors reported that the apprenticeship program helps them meet their skill demands—87 % reported they would strongly recommend registered apprenticeships; an additional 11 % recommended apprenticeships with some reservations. Other benefits of apprenticeships include reliably documenting appropriate skills, raising worker productivity, increasing worker morale, and reducing safety problems.

While apprenticeships offer a productivity-enhancing approach to reducing inequality and expanding opportunity, the numbers in the U.S. have declined in recent years to about one-tenth the levels in Australia, Canada, and Great Britain. Some believe the problems are inadequate information about and familiarity with apprenticeship, an inadequate infrastructure, and expectations that sufficient skills will emerge from community college programs. Others see the main problem as an unwillingness of U.S. companies to invest no matter how favorable government subsidy and marketing policies are. In considering these explanations, we should remember that even in countries with robust apprenticeship systems, only a minority

of firms actually hires apprentices. Because applicants already far exceed the number of apprenticeship slots, the main problem today is to increase the number of apprenticeship openings that employers offer. Counseling young people about potential apprenticeships is a sensible complementary strategy to working with the companies, but encouraging interest in apprenticeship could be counterproductive without a major increase in apprenticeship slots.

The high levels of apprenticeship activity in Australia, Great Britain, and Canada demonstrate that even companies in labor markets with few restrictions on hiring, firing, and wages are willing to invest in apprenticeship training. While no rigorous evidence is available about the apprenticeship's costs and benefits to U.S. employers, research in other countries indicates that employers gain financially from their apprenticeship investments (Lerman 2014).

Although apprenticeship training can prepare workers for a wide range of occupations, including medicine and engineering, apprenticeships are perhaps most appropriate for skilled positions that do not require a B.A. degree. A key question is whether these are the very jobs the country is losing and, if so, whether sufficient jobs amenable to apprenticeship will remain.

Patterns and Trends of Middle-Level Occupations

What are the mid-level or skilled sub-B.A. occupations that are most amenable to apprenticeship and significantly affected by the "hollowing out" of the middle class? Classifying mid-level occupations by a single distribution (say, by educational attainment or a score on a cognitive test) fails to capture the wide variety of skills required to master and be productive at specific jobs or occupations. One approach is to use wage as a proxy for skill in the particular job or occupation. Wages may be viewed as incorporating the skill levels along various dimensions together with the market valuation of those skills. However, wages reflect not only skill but also the riskiness, job satisfaction, responsibility, status, and flexibility of jobs and occupations. A second issue is that skill requirements and expertise required in an occupation might not change, but the wage return to the occupation might. Third, wages sometimes are a reward for tenure on the job; seniority often matters. Fourth, wage differences can come about from differences in bargaining power of workers in various fields. For example, the pay of longshoremen can depend on the ability of their representatives to gain strong returns because of the high costs of strikes relative to wage increases. Fifth, wages for the same occupation often differ widely across geographic areas, partly because of area differentials in the price of housing. Sixth, classifying occupations by mean wages can miss the wage variability within occupations.

A major proponent of the hollowing-out thesis ranks detailed occupations by their average wages in a base period (Autor 2010). Middle-skill jobs are in occupations in the middle segment of the average wage distribution in that period. Using his approach, Autor finds that middle-skill occupations are declining rapidly relative

to high- and low-skill positions. One of the main reasons is the increased power of computers to automate routine tasks that many middle-skill positions have long undertaken. Similar trends are apparently occurring in other countries. A paper by Goos et al. (2009) finds that middle-wage occupations declined as a share of employment in 16 countries.

The Autor approach provides a useful perspective but is subject to several limitations. One is the failure to capture the often wide distribution of wages within detailed occupations. Many sub-B.A. occupations can generate high wages at the top levels of quality and productivity. For example, the differences in wage levels, skill, and status are substantial between the occupations “cook at a restaurant” and “chefs and head cooks.” Cooks are low paid, but chefs command a median wage that is about 25 % higher than the overall national median. Despite their limited formal education (only 13 % have a B.A. or higher), the top 25 % of chefs earn as much as or more than the median wage of four out of 10 college occupations (50 % or more with B.A. degrees). Were cooks and lower-level chefs upgraded to a status of high quality and productivity, earnings for a noncollege occupation could compete with earnings of many college occupations.

Occupations with above-average earnings and with a majority of workers without a B.A. cover a wide range of fields. Among them are construction managers, buyers and purchasing agents, lodging managers, appraisers, court reporters, various types of technicians, aircraft mechanics, police officers, police supervisors, and operators of gas plants.

In another approach to examining occupational trends, Holzer and Lerman (2009) use U.S. Bureau of Labor Statistics (BLS) estimates of education and training requirements to classify broad occupational categories. High-skill occupations are those in the professional/technical and managerial categories, while low-skill occupations are those in the service and agricultural categories. Middle-skill occupations are all the others, including clerical, sales, construction, installation/repair, production, and transportation/material moving. With this classification, middle-skill jobs show a decline but still make up roughly half of all employment today. In a 2013 article, Autor and Dorn predict middle-skill jobs will survive when they embody such human skills as interpersonal interaction, adaptability, and problem solving. Among other jobs, they cite medical paraprofessionals; plumbers; builders; electricians; heating, ventilation, and air-conditioning installers; automotive technicians; customer-service representatives; and even clerical workers who are required to do more than type and file.

A key question raised by Autor and others is how to characterize jobs that require “... situational adaptability, visual and language recognition, and in-person interaction.” On one hand, preparing meals and driving a truck through city traffic are difficult to automate. Because these jobs need only modest training and attributes common across the population (dexterity, good eyesight, and language recognition), Autor sees them as commanding only low wages. But even these jobs could in principle involve pathways to reach “artisan” status.

Several occupations requiring a middle level of skills and good wages have increased a good deal since 1986, including medical therapists (such as respiratory,

recreational, and radiation therapists) by 30 %, carpenters (20 %), heavy vehicle maintenance specialists (25 %), and heating and air conditioning positions (21 %).

Taking Education, Training, and Labor Market Interactions into Account

The idea that education and training institutions should prepare people for current and future jobs raises several questions: Do jobs simply materialize from a single technology or family of technologies that effective employers eventually implement? Or, do employers confront a range of technologies, all of which can allow the company or public employer to remain competitive? Moreover, how does the choice of technology interact with the system of preparing or retraining workers?

An older literature (Piore and Doeringer 1971), now rarely cited, looked closely at segmented labor markets, where some employers choose to train, hire from within, and keep workers for long periods, while others operate mostly on the spot market, hiring and firing frequently and providing little training. Subsequently, many authors have highlighted that businesses have the choice to become “high road” vs. “low road” employers. For example, Osterman and Shulman (2011) insist that “firms have choices about how to organize work.” They find examples of firms producing the same good or service using technologies that generate more or fewer skilled jobs paying good wages. In a landmark article providing a theoretical rationale for employer occupational training, Acemoglu and Pischke (1999) demonstrated how firms might optimize their hiring and training strategies in several ways, depending on the structure of the labor market and the potential permanence of the jobs.

Actual jobs and compensation vary widely within occupations, suggesting that the nature of work may depend on institutional settings that can lead different firms to choose different technologies to produce the same good or service. Given that production may be undertaken using a variety of skill distributions, the key policy questions become: 1) what are the skills within occupations that raise long-term wages and productivity, and, 2) what are the best approaches to educating and training workers to reach high levels of productivity and wages?

Skill Requirements for Workers to Reach Middle Class

The skills required for middle-level occupations are far from obvious. One issue is the appropriate level of generic academic skills. Another is the appropriate level of specificity in occupational skills. A third is the role of generic, nonacademic skills, such as communication, motivation, and responsibility. Some of all three types of skills are required for nearly all jobs, but the levels vary across occupations.

In the case of general academic requirements, U.S. education reformers have boldly claimed that "... *all* students — those attending a four-year college, those planning to earn a two-year degree or get some postsecondary training, and those seeking to enter the job market right away—need to have comparable preparation in high school" (Achieve 2005). Despite strong evidence against this proposition (Lerman 2008), this idea is taken seriously and has led to the creation of the Common Core standards at the high school level. The curriculum is in the process of implementation and is likely to crowd out occupation-based programs.

The evidence strongly suggests that occupational and nonacademic skills are far more significant from the employer perspective than are exposure to high-level academic courses. For example, data from a survey asking a representative sample of U.S. workers what skills they use on the job (Handel 2007) indicate that only 19 % use the skills developed in Algebra I, only 9 % use the skills for Algebra II, and less than 15 % of workers ever write anything five pages or more. On the other hand, upper blue-collar and even lower blue-collar workers need to know how to read and create visuals, such as maps, diagrams, floor plans, graphs, or blueprints—skills typically learned in occupation-specific courses. Moreover, certain nonacademic skills are clearly critical. Workers report the importance of problem-solving and communication skills, teaching and training other workers, dealing with people in tense situations, supervising other workers, and working well with customers.

One useful categorization of these skills comes from the 1992 Secretary's Commission on Achieving Necessary Skills (SCANS) report in the U.S. After researching the literature, consulting with experts, and conducting detailed interviews with workers and/or supervisors in 50 occupations, SCANS identified five groups of workplace competencies: the ability to allocate resources (time, money, facilities); interpersonal skills (such as teamwork, teaching others, leadership); the ability to acquire and use information; understanding systems; and working well with technology. The key personal qualities highlighted by SCANS and many surveys of employers include responsibility, self-esteem, sociability, self-management, and integrity and honesty. Hanover Research (2011) provides an updated analysis of lists of various twenty-first century generic skills.

In a survey of 3,200 employers that focused on four large metropolitan areas in the U.S., the responses indicated that such personal qualities as responsibility, integrity, and self-management are as important as basic skills or more so (Holzer 1997). In another large survey undertaken in the mid-1990s of 3,300 businesses (the National Employer Survey), employers ranked attitude, communication skills, previous work experience, employer recommendations, and industry-based credentials above years of schooling, grades, and test scores (Zemsky 1997). In a 2007 survey of employers in Washington state, about 60 % of employers reported difficulty in hiring (Washington State Workforce Training and Education Coordinating Board 2008). They experienced less difficulty finding workers with adequate reading, writing, and math skills than with appropriate occupational, problem solving, teamwork, communication, and adaptability skills as well as positive work habits and a willingness to accept supervision. Punctuality, reliability, and avoidance of drug and alcohol abuse are also critical. In a 2002 survey of 27,000 employers in the United

Kingdom, 23 % of employers reported a significant number of their staff were less than fully proficient in their jobs. Skill shortfalls were most common in communication, teamwork, other technical and practical skills, customer handling, and problem solving and least common in numeracy and literacy (Hillage et al. 2002).

Evidence confirming the importance of noncognitive/nonacademic skills has been accumulating in academic literature as well. Heckman et al. (2006) find that except in the case of college graduates, noncognitive skills (as measured by indices of locus of control and self-esteem) exert at least as high an impact—and probably a higher one—on job market outcomes than do cognitive skills (word knowledge, paragraph comprehension, arithmetic reasoning, mathematical knowledge, and coding speed as measured by the Armed Forces Vocational Aptitude Battery).

In a recent study, Lindqvist and Vestman (2011) document the differential impacts of cognitive and what they term as noncognitive skills on the earnings of Swedish men. They used special data on a representative sample of the Swedish male population matched with education, earnings, and information on cognitive and noncognitive skills obtained in the military enlistment process through interviews with psychologists. Persistence, social skills, and emotional stability were the key noncognitive skills measured and scored from the interview. Lindqvist and Vestman found that cognitive and noncognitive skills are both positively related to employment and earnings. In the low to mid ranges of skills, noncognitive skills exert a higher impact on wages than do cognitive skills.

The sociocultural approach provides some revealing examples of how skills are used in context and how nonacademic skills are often developed and used as part of a “community of practice” (Stasz 2001). Nelsen (1997) points out that workplaces not only require formal knowledge—facts, principles, theories, math, and writing skills—but also informal knowledge—embodied in heuristics, work styles, and contextualized understanding of tools and techniques (Nelsen 1997). In her revealing case study of auto repair workers, Nelsen argues that social skills of new workers are very important for learning the informal knowledge of experienced workers, such as captured in stories, advice, and guided practice. Unfortunately, according to Nelsen, the social skills learned at school are not necessarily the same as the ones most useful at work.

What about occupational skills? Often, firms, labor representatives, and government reach agreement on what is required for a qualification that will allow employers to have confidence in the capabilities of their young workers. In several countries, skill requirements for occupations develop through the operation of apprenticeship programs and other training programs. Sometimes, the occupational qualifications fit within a broad framework of national vocational qualifications running from basic to intermediate to advanced levels (for a review of national qualification frameworks in Europe, see Cedefop 2012).

Taking a Look at Other Nations

In the United Kingdom, the National Vocational Qualification (NVQ) system specifies requirements for proficiency that vary widely across types of occupations and over levels within occupations.⁵ It is a modular system that recognizes workplace learning and competence based on evidence of performance at the workplace. The NVQ system takes skill gradations in each defined field into account and allows workers to gain documentation for each level, whether attained with one employer or many. The ultimate goal is that employers place a value on attaining a qualification level, giving workers an incentive to learn on the job. Although this system has not worked as effectively as planned (Eraut 2001), the NVQ approach offers one example of how certifying the attainment of skills can provide the basis for measuring the heterogeneity of skills.

One effort to develop occupational or industry standards in the U.S.—the National Skill Standards Board (NSSB)—failed to develop relevant, rigorous, portable, and well-recognized skill standards to guide training and provide reliable signals to worker and employers. However, occupation-specific skills standards exist in the U.S. through state-level licensing and certification. These forms of occupation qualifications are expanding. Today, about one in five workers requires a state license to practice his or her occupation, up from less than 5 % in the early 1950s (Kleiner 2006). Much of this increase has resulted from rapid growth in traditionally licensed occupations such as physicians, dentists, and attorneys. But the number of licensing laws has been increasing as well. In the U.S., licensing rules vary widely across states, with many states regulating occupations as varied as alarm contractor, auctioneer, manicurist, and massage therapists. Although licenses ostensibly offer some quality assurance to consumers among all providers, Kleiner finds evidence of licensure playing more of a role in raising prices than assuring quality.

School-based and dual work-based/school-based systems try to ensure that occupational qualifications are widely accepted by employers. In primarily school-based programs, decisions about what is necessary to prepare young people for particular careers are often made by the faculty of postsecondary institutions. Often, training colleges—such as U.S. community colleges and for-profit schools—decide themselves (sometimes in consultation with potential employers) what constitutes qualifications in quite detailed occupations, such as domestic air conditioner and furnace installer, medical receptionist, and medical coder.⁶ Other standards directly involve employers and government entities.

Occupational standards are prerequisites for the functioning of apprenticeship programs, which involve work- and school-based learning leading to a credential

⁵ For an overview on NVQ and other qualification systems in the United Kingdom, see material provided by the Qualifications and Learning Authority at <http://www.qca.org.uk>

⁶ Curricula for certificates in these occupations appear in the catalog for the Kentucky technical college system. See http://kctcs.edu/en/students/programs_and_catalog.aspx

documenting the individual's occupational qualifications. This issue has been tackled abroad in a variety of ways. Australia has developed the national Training Package (collections of competency standards gathered into qualifications) for all industry areas, while previously qualifications were only available in a limited range of occupations and industries (Smith 2012). The development of Training Packages is one activity of the nation's ten national Industry Skills Councils. In Canada, the Interprovincial Standards Red Seal Program helps develop occupational standards that allow for effective harmonization of apprenticeship training and assessment in each province and territory (Miller 2012). The Red Seal program's standards incorporate essential skills (reading, document use, writing, numeracy, oral communication, thinking, digital technology, and lifelong learning), common occupational skills (that apply to a small range of occupations), and specific occupational skills.⁷

In England, the Sector Skills Councils and their employers design the content of each apprenticeship using the design principles of a national Apprenticeship Blueprint (Miller 2012). The secretary of state appoints and Sector Skills Councils commission an Issuing Authority to promulgate standards for specific apprenticeships. As of 2012, there were 200 operating apprenticeship frameworks and an additional 118 under development. At the same time, employers have considerable flexibility in implementing their apprenticeship programs. France uses Apprenticeship Training Centers to help design and deliver the classroom-based components of apprenticeship, with skill standards often developed by Professional Consultative Committees (Dif 2012). They operate under frameworks established by the National Commission for Vocational Qualifications.

In Switzerland, the Federal Office for Professional Education and Technology, together with cantons, employers, trade associations, and unions, participate in framing the occupational standards for about 250 occupations (Hoeckel et al. 2009). The canton vocational education programs implement and supervise the vocational schools, career guidance, and inspection of participating companies and industry training centers. Professional organizations develop qualifications and exams and help develop apprenticeship places. Occupational standards in Germany are determined primarily by the "social partners," including government, employer, and employee representatives (Hoeckel and Schwartz 2009). The chambers of commerce advise participating companies, register apprenticeship contracts, examine the suitability of training firms and trainers, and set up and grade final exams.

The content of skill requirements in apprenticeships includes academic courses and structured work-based training. In each field, the requirements are to complete the coursework in a satisfactory manner and demonstrate the apprentice's ability to master a range of tasks. In some systems, there are a set of general tasks that apply to a family of occupations (say, metalworking) and tasks that apply to a specific occupation (say, tool mechanics or metal construction and shipbuilding). While the tasks vary widely across occupations, all involve the application of concepts and academic competencies.

⁷ See the documents linked at <http://www.red-seal.ca/tr.Id.2@-eng.jsp?tid=51> for examples.

The coverage of occupational standards for apprenticeship extends well beyond the traditional construction crafts. In the U.K., for example, specific apprenticeships are available within such broad categories as business, administration and law; arts, media, and publishing; health and public services; retail and commercial enterprise; and information technology and communication. Common apprenticeships in Switzerland include information technology specialists, commercial employees, pharmacy assistants, and doctor's assistants. German standards cover over 300 occupations, including lawyer's assistants, bank staff workers, industrial mechanics, industrial managers, retail workers, commercial sales, and computer networking. While much of the training is specific to the occupation, nearly all fields learn skills in closely related occupations. For example, apprentices in industrial management learn accounting, procurement, production planning, staffing, and logistics.

The ability to raise the quality of jobs and workers across occupations appears to help achieve relatively low levels of wage inequality. The enhanced occupational skills and productivity result in increased wages for workers who in other societies have low or average wages. As of the mid-1990s, the evidence showed wage inequality was especially low in countries that used apprenticeships extensively, including Austria, Germany, and Switzerland (Martins and Pereira 2004).

The Timing and Flexibility of Apprenticeship Training

Countries have developed a variety of approaches for training workers to become effective in intermediate level occupations—those that require considerable skill but not a B.A. degree. Systems vary with respect to the level and duration of general education, the timing of occupation-specific education and training, and the split between classroom- and work-based learning. Waiting too long to incorporate occupation-focused education and training runs the risk of high levels of disengaged students and forcing a highly academic approach on many students who would do better in a more concrete setting that emphasizes applications. This argument is especially strong to the extent that school requirements are poorly matched to the job market opportunities facing most young people.

On the other hand, beginning an occupation-focused program too early might trap youth in unrewarding fields and limit their adaptability and upward mobility. Work-based learning is appealing, but critics worry that the training will be too specific and firms will fail to offer sufficient positions. Still, several countries train skilled craftsmen through apprenticeships. However, for many other occupations, some systems rely entirely on school-based systems and some on work-based apprenticeship models that incorporate some classroom instruction.

Although discussions of skill preparation systems generally focus on the work- vs. school-based distinction, the quality, depth, and portability of what students or apprentices learn are at least as important. The skills learned in school-based programs are not necessarily of greater general applicability than those learned in apprenticeship programs. It depends on the specifics of what is being taught and the

likelihood that the worker will stay with the training occupation or an adjacent occupation. Depending on the program's content, workers may or may not be able to sustain the gains from training when moving to another firm with the same occupation or in other occupations.

The portability of the skills learned in occupation-specific programs is a common concern about apprenticeships or any occupation-specific training. Several questions are relevant. How likely is the worker to stay in the occupation and/or with the firm? Will the worker be able to sustain the gains from training when moving to another firm but staying in the same occupation? How transferable are the skills learned to other occupations? How do the earnings gains of workers trained in occupation-specific programs compare with those of workers receiving only general postsecondary education?

How skill portability varies with the mode of learning and the curricula is unclear, *a priori*. As Geel and Gelner (2009) point out, learning even a highly specific skill can yield benefits outside the narrow occupation.

For example, an adolescent who wants to become a clockmaker should not necessarily be considered poorly equipped for future labor market requirements, even though his industry is small and shrinking. Rather, he is well equipped because his skill combination is very similar to skill combinations of other occupations in a large and growing skill cluster, which includes, for example, medical technicians or tool makers. Despite a seemingly very narrow and inflexible skill combination in his original occupation, he is nonetheless very flexible and well prepared for future labor market changes due to the sustainability of his acquired skills and his current skill cluster.

To operationalize the concept of skill specificity, Geel and Gelner (2009) and Geel et al. (2011) begin with an insight borrowed from Lazear (2009) that all skills are general in some sense, and occupation-specific skills are composed of various mixes of skills. The authors compile the key skills and their importance for nearly 80 occupations. They then use cluster analysis to estimate how skills are grouped within narrow occupations. This approach recognizes that skills ostensibly developed for one occupation can be useful in other occupations. It identifies occupational clusters that possess similar skill combinations within a given cluster and different skill combinations between clusters. Next, indices for each narrow occupation measure the extent to which the occupation is relatively portable between occupations within the same cluster and/or relatively portable between the initial occupation and all other occupations. The authors use these indices to determine how portability affects mobility, the wage gains and losses in moving between occupations, and the likelihood that employers will invest in training.

The authors test their hypotheses on the basis of empirical analyses of German apprentices. One finding is that while only 42 % of apprentices stay in their initial occupation, nearly two-thirds remain with either the occupation they learned as an apprentice or another occupation in the cluster using a similar mix of skills. Second, those trained in occupations with more specific skill sets are most likely to remain in their initial occupation or move to occupations within the same cluster. Third, apprentices actually increase their wages when moving to another occupation within

the same cluster but lose somewhat when moving to another cluster. Fourth, as Geel et al. (2011) show, employers are especially likely to invest in apprenticeships with the most specific skill sets.

Other strong evidence of the high returns and transferability of German apprenticeship training comes from Clark and Fahr (2001). They examine the returns to apprenticeship for those who remain in the original apprentice occupation as well as losses that do or would occur from transferring to another occupation. The overall rates of return to each year of apprenticeship range from 8 to 12 % for training in firms of 50 workers or more and from about 5.5 to 6.5 % for firms of two to 49 workers. Transferring to another occupation can offset these gains, but the reduction is zero for those who quit and only 1.7 % for those who are displaced from their job and shift to another occupation.

As found by Geel and Gellner (2009), the wage penalty varies with the distance from the original occupation. There is no penalty at all from displacement into a somewhat related occupation. Göggel and Zwick (2012) show the net gains or losses from switching employers and occupations differ by the original training occupation, with apprentices in industrial occupations actually experiencing wage advantages, while those in commerce, trading, and construction see modest losses. Finally, Clark and Fahr (2001) present workers' own views on their use of skills learned in apprenticeship training on their current jobs. Not surprisingly, 85 % of workers remaining within their training occupation use many or very many of the skills they learned through apprenticeship. This group constitutes 55 % of the sample. But, even among the remaining 45 %, about two of five workers reported using many or very many of the skills from their apprenticeship and one in five used some of the skills. Overall, only 18 % of all former apprentices stated they used few or no skills learned in their apprenticeships.

The findings show that the skills taught in German apprenticeship training are often general. Even when bundled for a specific occupation, the skills are portable across a cluster of occupations. Moreover, apprentices are quite likely to remain in occupations that use the skills they learned in their initial occupation. Apprenticeship skills do vary in terms of specificity and portability. But when the skills are less portable, firms are more likely to make the necessary investments and workers are less likely to change occupations significantly.

The general component of training is presumably stronger in school-based programs, because they are financed by government and/or individuals themselves. For this reason, some favor school-based systems, arguing that firm-based apprenticeship training limits mobility and adaptability (Hanushek et al. 2011). Yet, it is far from clear that these programs, especially the purely academic tracks in U.S. secondary schools and U.S. community colleges, offer more mobility. A high percentage of students drop out of both academic secondary and community college programs. Also, many of the community college programs are at least as specific as apprenticeship programs. Certificate programs within community colleges are almost entirely devoted to learning a narrow occupational skill, such as courses to become a phlebotomist, childcare assistant, or plastics-processing worker. Many U.S. school-based programs take place in for-profit colleges offering narrow

programs, such as truck driving, medical assistant, and medical insurance billing and coding. Furthermore, skills often erode when they go unused. To the extent students learn general skills but rarely apply them and wind up forgetting them, their training is unlikely to offer upward mobility.

While community college and private for-profit students often take highly specific occupational courses, apprentices all take some general classroom courses. Thus, apprentice electricians learn the principles of science, especially those related to electricity. In most countries, collaboration takes place between public vocational schools and apprenticeship programs. In the U.S., apprentices often take their required “related instruction” in classes at community colleges or for-profit colleges (Lerman 2010). From this perspective, apprenticeship programs should be viewed as “dual” programs that combine work- and school-based learning, albeit with an emphasis on work-based learning.

In the case of other OECD countries, the mix of school- vs. employer-based programs used to prepare young people for careers varies widely (OECD 2009, 2010). Secondary school students in Belgium and Sweden participate at high rates in vocational education but have very low rates of participation in work-based programs. In contrast, most of the vocational education in Germany, Switzerland, and Denmark revolves around work-based learning, including apprenticeships.

Apprenticeship training is attractive in limiting the gaps between what is learned at school and how to apply these and other skills at the workplace. An extensive body of research documents the high economic returns to workers resulting from employer-led training (Bishop 1997). Transmitting skills to the workplace works well with supervisory support, interactive training, coaching, opportunities to perform what was learned in training, and keeping the training relevant to jobs (Pellegrino and Hilton 2012). These are common characteristics of apprenticeships. Employer-based training like apprenticeship often bears fruit in the form of higher levels of innovation (Bauernschuster et al. 2009), net gains to firms that train during and soon after the training, and externalities, such as benefits for other employers and the public when workers are well trained to avoid the consequences of natural or manmade disasters. Generally, apprenticeships and other forms of employer-based training are far less costly to the government. Moreover, the government generally gains by paying little for the training while reaping tax benefits from the increased earnings of workers.

What Policies Can Encourage Firms to Adopt Apprenticeship in the U.S.?

Today, apprenticeships make up only 0.2 % of the U.S. labor force, far less than the 2.2 % in Canada, 2.7 % in Britain, and 3.7 % in Australia and Germany. In addition, government spending on apprenticeships is tiny compared with spending by other countries as well as compared with what it costs to pay for less effective career and

community college systems that provide education and training for specific occupations. While total government funding for apprenticeship in the U.S. is only about \$100 to \$400 per apprentice annually, federal, state, and local government spending annually per participant in two-year public colleges is approximately \$11,400 (Cellini 2009). Not only are government outlays sharply higher, but the cost differentials are even greater after accounting for the higher earnings (and associated taxes) of apprentices compared to college students. Given these data, we can attribute at least some of the low apprenticeship penetration to a lack of public effort in promoting and supporting apprenticeship and to heavy subsidies for alternatives to apprenticeship.

However, the historical reasons for apprenticeship's low penetration in the U.S. are less important than the potential for future expansion.⁸ Recent experience in Britain and in selected areas in the U.S. suggests grounds for optimism, but the barriers to expansion are significant.

One is limited information about apprenticeship. Because few employers offer apprenticeships, most employers are unlikely to hear about apprenticeships from other employers or from workers in other firms. Compounding the problem is both the difficulty of finding information about the content of existing programs and the fact that developing apprenticeships is complicated for most employers, often requiring technical assistance that is minimal in most of the country. Experiences in England and South Carolina demonstrate that effective marketing is critically important for expanding the number of firms offering apprenticeships.

Another barrier is employer misperceptions that apprenticeship will bring in unions. There is no evidence that adopting an apprenticeship program will increase the likelihood of unionization, but reports about such close links persist. An additional barrier is the asymmetric treatment of government postsecondary funding, with courses in colleges receiving support and courses related to apprenticeship receiving little financial support. Policies to reduce the government spending differentials between college subsidies and apprenticeship subsidies can help overcome this barrier.

Another significant complication to developing more apprenticeships is that U.S. apprenticeships are categorized in three different ways: registered apprenticeships with the Department of Labor's Office of Apprenticeship (OA), unregistered apprenticeships, and youth apprenticeships. Official data generally fail to track unregistered apprenticeships; evidence suggests their numbers exceed registered apprenticeships.⁹ Small youth apprenticeship programs operate in a few states. Tiny budgets and an excessive focus on construction have hampered expansion of the registered apprenticeship system. The federal government spends less than \$30 million annually to supervise, market, regulate, and publicize the system. Many states

⁸For a detailed look at the barriers to expanding apprenticeship in the U.S., see Lerman (2013).

⁹Data from the combined 2001 and 2005 National Household Education Surveys indicate that 1.5 % of adults were in an apprenticeship program in the prior year (NCES 2008). If these data were accurate, the number of unregistered apprentices would far exceed registered apprenticeship.

have only one employee working under their OA. In sharp contrast, Britain spends about one billion pounds (or about \$1.67 billion) annually on apprenticeship, which would amount to nearly \$8.5 billion in the U.S., after adjusting for population.

Unlike programs in Austria, Germany, and Switzerland, the U.S. apprenticeship system is almost entirely divorced from high schools and serves very few workers under 25. Only a few states, notably Georgia and Wisconsin, now operate youth apprenticeship programs that provide opportunities to 16- to 19-year-olds. State funding pays for coordinators in local school systems and sometimes for required courses not offered in high schools. In Georgia, 143 of 195 school systems currently participate in the apprenticeship program and serve a total of 6,776 students. These apprentices engage in at least 2,000 h of work-based learning as well as 144 h of related classroom instruction. The Wisconsin program includes one- to two-year options for nearly 2,000 high school juniors or seniors, requiring from 450 to 900 h in work-based learning and two to four related occupational courses. The program draws on industry skill standards and awards completers with a certificate of occupational proficiency in the relevant field. Some students also receive technical college academic credit. In Georgia, the industry sectors offering apprenticeships range from business, marketing, and information management to health and human services and technology and engineering. The Wisconsin youth apprenticeships are in food and natural resources, architecture and construction, finance, health sciences, tourism, information technology, distribution and logistics, and manufacturing.

Bipartisan Initiatives and New Proposals

Both the administration and some members of Congress have proposed expanded funding for apprenticeship. President Obama included \$500 million per year for 4 years in his fiscal year 2015 budget. Senators Tim Scott (Republican from South Carolina) and Cory Booker (Democrat from New Jersey) have proposed providing tax credits to employers hiring apprentices.

In December 2014, the Obama administration issued a competitive grant announcement that will allocate about \$100 million to expand apprenticeship.¹⁰ The administration used its discretion to apply funds from the user fees paid by employers to hire foreign workers as part of the H-1B temporary immigration program. As a result, the grants are oriented toward expanding apprenticeships in occupations that often use H-1B workers from abroad. The industry areas include advanced manufacturing, business services, and health care. Competitors for the grant will have access to funding of \$2.5 million to \$5 million over 5 years. The key goal is to increase apprenticeship options for workers, but other goals include reaching out to underrepresented groups.

¹⁰ See U.S. Department of Labor, Employment and Training Administration, Notice of Availability of Funds and Funding Opportunity Announcement for the American Apprenticeship Initiative, 2015 at <http://www.dol.gov/dol/grants/FOA-ETA-15-02.pdf>

Whether to emphasize apprenticeships beginning in late high school or after high school involves tradeoffs. High school programs improve the likelihood of government funding for academic courses related to apprenticeships. Given the consensus that the government should fund students through secondary school, paying for the related instruction of high school apprentices becomes a nondiscretionary part of budgets. When apprentices are beyond high school, government funding for related instruction must come out of discretionary expenses. International experience demonstrates the feasibility of youth apprenticeships; youth are able to attain serious occupational competencies while completing secondary education.

Apprenticeships in the late teenage years improve the nonacademic skills of youth at a critical time. In countries with little or no youth apprenticeship, structured work experience is less common, limiting the ability of youth to develop critical employability skills such as teamwork, communication, problem solving, and responsibility. Early apprenticeships can help engage youth and build their identity (Halpern 2009; Brown et al. 2007). Apprentices work in disciplines that are interesting and new; they develop independence and self-confidence through their ability to perform difficult tasks. Youth try out new identities in an occupational arena and experience learning in the context of production and making things.

From an economic perspective, apprenticeships for youth can be less costly for employers. Wages can be lower partly because youth have fewer medium- and high-wage alternatives and partly because youth have fewer family responsibilities, allowing them to sacrifice current for future income more easily. While Swiss firms invest large amounts of dollars in their apprenticeship programs, they pay their young apprentices very low wages during the apprenticeship period. Another economic advantage is that starting earlier in one's career allows for a longer period of economic returns to training.

For the U.S., scaling apprenticeship in the last years of high school is difficult. The aversion to tracking students too early into an occupational sequence is a common objection to youth apprenticeship. Importantly, high school officials are generally averse to adding youth apprenticeship to their already extensive agenda, including implementing Common Core standards and school and teacher accountability standards as well as dealing with charter schools and vouchers. In the early 1990s, opposition to youth apprenticeship in the U.S. came from unions and others who worried about eroding the apprenticeship brand with less intensive training programs.

To build a robust apprenticeship system in the U.S., even with new resources, the strategies will require branding at the state and/or federal levels and marketing at both the general and the firm level. I suggest five strategies: two could be accomplished at the state level, and three would be the responsibility of the federal government.

The State Role

Develop High Level and Firm-Based Marketing Initiatives

Britain's success in expanding apprenticeships from about 150,000 in 2007 to over 850,000 in 2013 offers one example for how to create successful national and decentralized marketing initiatives. Alongside various national efforts, including the National Apprenticeship Service and industry skill sector councils, the British government provided incentives to local training organizations to persuade employers to create apprenticeships. A similar model could be developed in the U.S. state governments could build a state marketing campaign together with incentives and technical support to community colleges and other training organizations to market apprenticeships at the individual firm level. However, simply marketing to firms through existing federal and state agencies may not work if the staff lacks the marketing dynamism, sales talent, and passion for expanding apprenticeship. Pay for performance is recommended: Technical education and training organizations would earn revenue only for additional apprenticeships that each college or organization managed to develop with employers.

Every apprenticeship slot stimulated by the college/training organization increases the work-based component of the individual's education and training and reduces the classroom-based component. Assume the work-based component amounts to 75 % of the apprentice's learning program and the school-based courses are only 25 % of the normal load for students without an apprenticeship. By allowing training providers to keep more than 25 % of a standard full-time-equivalent cost provided by federal, state, and local governments in return for providing the classroom component of apprenticeship, the community colleges and other training organizations would have a strong incentive to develop units to stimulate apprenticeships. State and local governments could provide matching grants to fund units within technical training organizations to serve as marketing arms for apprenticeships. The marketing effort should encourage government employers as well as private employers to offer more apprenticeships.

South Carolina's successful example involved collaboration between the technical college system, a special unit devoted to marketing apprenticeship, and a federal representative from the Office of Apprenticeship. With a state budget for Apprenticeship Carolina of \$1 million per year as well as tax credits to employers of \$1000 per year per apprentice, the program managed to stimulate more than a sixfold increase in registered apprenticeship programs and a fivefold increase in apprentices. Especially striking is that these successes—including 4000 added apprenticeships—took place as the economy entered a deep recession and lost millions of jobs. The costs per apprentice totaled only about \$1250 per apprentice calendar year, including the costs of the tax credit.

Build on Youth Apprenticeship Programs

State government spending on youth apprenticeship programs amounts to about \$3 million in Georgia and \$2 million in Wisconsin. Although these programs reach only a modest share of young people, the U.S. could make a good start on building apprenticeship if the numbers in Georgia could be replicated throughout the country. The focus would be on students who perform better in work- than purely school-based settings and are less likely than the average student to attend college or complete a B.A. degree. To create about 250,000 quality jobs and learning opportunities, the gross costs of such an initiative would be only about \$105 million, or about \$450 per calendar year, or about 4 % of current school outlays per student-year. Moreover, some of these costs would be offset by reductions in teaching expenses, with more students spending greater amounts of time in work-based learning and less time in high school courses. Having fewer students have to repeat grades will save costs as well. In all likelihood, the modest investment would pay off handsomely in the form of increased earnings and associated tax revenues as well as reduced spending on educational and other expenditures.

Good places to start are career academies—schools within high schools that have an industry or occupational focus—and regional career and technical education (CTE) centers. Over 7,000 career academies operate in the U.S. in fields ranging from health and finance to travel and construction (Kemple and Willner 2008). Career academies and CTE schools already include classroom-related instruction and sometimes work with employers to develop internships. Because a serious apprenticeship involves learning skills at the workplace at the employer's expense, these school-based programs would be able to reduce the costs of teachers relative to a full-time student. If, for example, a student spent two days per week in a paid apprenticeship or 40 % of time otherwise spent in school, the school should be able to save perhaps 15–30 % of the costs. Applying these funds to marketing, counseling, and oversight for youth apprenticeship should allow the academy or other school to stimulate employers to provide apprenticeship slots. Success in reaching employers will require talented, business-friendly staff who are well trained in business issues and apprenticeship.

To implement this component, state governments should fund marketing and technical support to career academies to set up cooperative apprenticeships with employers, either using money from state budgets or federal dollars. The first step should be planning grants for interested and capable career academies to determine who can best market to and provide technical assistance to the academies. Next, state governments should sponsor performance-based funding to units in academies so they receive funds for each additional apprenticeship. Private foundations should offer resources for demonstration and experimentation in creating apprenticeships within high school programs, especially career academies.

The Federal Role

Extend Use of Current Postsecondary and Training Subsidies to Apprenticeship

In nearly all other countries, the government is responsible for the classroom-based component of apprenticeship. One approach to making this jump in the U.S. is to use existing postsecondary programs to finance or at least subsidize the classroom portion of apprenticeships. Already, localities can use training vouchers from the Workforce Investment Act for apprenticeship. To encourage greater use of vouchers for apprenticeship, the federal government could provide one to two more vouchers to Workforce Investment Boards for each training voucher used in an apprenticeship program. Another step is to encourage the use of Trade Adjustment Act (TAA) training subsidies to companies sponsoring apprenticeships just as training providers receive subsidies for TAA-eligible workers enrolled in full-time training. In addition, policies could allow partial payment of TAA's extended unemployment insurance to continue for employed individuals in registered apprenticeship programs.

Allowing the use of Pell grants to pay at least for the classroom portion of a registered apprenticeship program makes perfect sense as well. Currently, a large chunk of Pell grants pays for occupationally oriented programs at community colleges and for-profit career colleges. The returns on such investments are far lower than the returns to apprenticeship. The Department of Education already can authorize experiments under the federal student aid programs (Olinsky and Ayres 2013), allowing Pell grants for some students learning high-demand jobs as part of a certificate program. Extending the initiative to support related instruction (normally formal courses) in an apprenticeship could increase apprenticeship slots and reduce the amount the federal government would have to spend to support these individuals in full-time schooling.

The GI Bill already provides housing benefits and subsidizes wages for veterans in apprenticeships. However, funding for colleges and university expenses is far higher than for apprenticeship. Offering half the GI Bill college benefits to employers hiring veterans into an apprenticeship program could be accomplished by amending the law. However, unless the liberalized uses of Pell grants and GI Bill benefits are linked with an extensive marketing campaign, the take-up by employers is likely to be limited.

Designate Best Practice Occupational Standards for Apprenticeships

To simplify the development of apprenticeships for potential employers, a joint Office of Apprenticeship-Department of Commerce team should designate one or two examples of good practice with regard to specific areas of expertise learned at work sites and subjects learned through classroom components. The OA-Commerce

team should select occupational standards in consultation with selected employers who hire workers in the occupation. Once selected, the standards should be published and made readily accessible. Employers who comply with these established standards should have a quick and easy path to registration of the program. In addition, workforce professionals trying to market apprenticeships will have a model they can sell and that employers can adopt and/or use with modest adjustments. Occupational standards used in other countries can serve as starting points to the Labor-Commerce team and to industry groups involved in setting standards and in illustrating curricula.

Develop a Solid Infrastructure of Information, Peer Support, and Research

The federal government should sponsor the development of an information clearinghouse, a peer support network, and a research program on apprenticeship. The information clearinghouse should document the occupations that currently use apprenticeships not only in the U.S. but also in other countries along with the list of occupation skills that the apprentices master. It should include the curricula for classroom instruction as well as the skills that apprentices should learn and master at the workplace. Included in the clearinghouse should be up-to-date information on available apprenticeships and applicants looking for apprenticeships. The development of the information hub should involve agencies within the Department of Commerce as well as the OA.

The research program should cover topics especially relevant to employers, such as the return to apprenticeship from the employer perspective and the net cost of sponsoring an apprentice after taking account of the apprentice's contribution to production. Other research should examine best practices for marketing apprenticeship, incorporating classroom and work-based learning by sector, and counseling potential apprentices.

Conclusions

Expanding apprenticeship is a potential game-changer for improving the lives of millions of Americans and for preventing further erosion of the middle class. Apprenticeships widen routes to rewarding careers by upgrading skills, including occupational skills but also math, reading, and employability skills. Taking math, reading, and writing in the context of using these competencies in the workforce will increase the motivation of many workers and the efficacy of the delivery process. Given the ability of workers to learn more, remain well motivated, and notice how to make innovations at the workplace, firms will have an increased incentive to adopt "high road" strategies and make them work. Such an approach may be one of the only ways the firm can attract and sustain workers.

Apprenticeships can also increase the efficiency of government dollars spent on developing the workforce. Instead of spending over \$11,000 per year on students in community college career programs, why not shift resources toward far more cost-effective apprenticeship programs? Apprenticeship programs yield far higher and more immediate impacts on earnings than community or career college programs yet cost the student and government far less. Community college graduation rates, especially for low-income students, are dismally low. Even after graduating, individuals often have trouble finding a relevant job. For students in postsecondary education, foregone earnings are one of the highest costs. In contrast, participants in apprenticeships rarely lose earnings and often earn more than if they did not enter an apprenticeship. Further, apprentices are already connected with an employer and can demonstrate the relevant credentials and work experience demanded by other employers. Another advantage is the net gains flowing to employers from apprenticeship programs.

The key question is not whether the shift in emphasis from community and/or career colleges toward apprenticeships is desirable but whether it is feasible. Although some argue that the free U.S. labor market and the weak apprenticeship tradition pose insurmountable barriers to scaling apprenticeship, the dramatic increases in apprenticeship in Britain offer strong evidence that building a robust apprenticeship program in the U.S. is possible.

We are well along with the task of persuading policy makers about the desirability and feasibility of apprenticeship. With the Obama administration's grants for the American Apprenticeship Initiative, as of this writing, we were expecting a mix of approaches beginning in the summer of 2015 aimed at expanding apprenticeship. In addition, employers would learn about the returns to apprenticeship as a result of their own experience and expected evaluations. Still, structural barriers remain that limit the development of a robust apprenticeship system in the U.S.

It is past time for federal and state governments to make a genuine effort to build an extensive and high value apprenticeship system. Without such an effort, we will never know whether U.S. employers will follow the patterns of other countries, create a significant number of apprenticeship slots, and recognize the gains to firms from such investments if we do not try. Institutional change of this magnitude is difficult and will take time but will be worthwhile in increasing earnings of workers in middle-skill jobs, widening access to rewarding careers, enhancing occupational identity, increasing job satisfaction, and expanding the middle class.

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Why Firms Do and Don't Offer Apprenticeships

Robert I. Lerman¹

Abstract The workforce strategy of firms is increasingly important for competitiveness and for producing at high quality and low costs. Firms must decide on the mix of skills and wages for current and future operations and on whether to train skilled workers or hire them from the open labour market. While traditional human capital theory states that firms will not finance training for general skills, modifications of the theory show training for general skills can be profitable. The modifications are compelling, since employer training for occupational skills varies widely across countries. Employers in the U.S. and France provide little occupational training while the extent of employer occupational training in Germany and Switzerland is enough to reach 55-70 percent of a youth cohort. This chapter examines the factors influencing firm choices about providing one type of general training-apprenticeships. Offers of apprenticeships are common in countries where knowledge about apprenticeships is widespread, occupational standards are well developed, and the government finances related, off-the-job training. One reason is that firms in these countries recoup most or all of their investments during the apprenticeship itself, mainly because of the productive contributions to output by the apprentices. But in other contexts, such as the U.S., firms are far less likely to offer apprenticeships. South Carolina's Apprenticeship Carolina demonstrates how marketing to individual firms and simplifying the process of hiring apprentices can lead large numbers of employers to provide occupational skills training.

1 Introduction

Developing, producing, and selling goods and services in today's competitive world require high quality and low production costs. Success is far from assured, as revealed by the ups and downs firms experience in their sales and profits and by frequent bankruptcies. In general, companies rarely place workforce issues at the top of their agenda. They worry about such questions as: where are sales coming from? Will we produce enough goods and services or too many? What are the le-

gal and regulatory hurdles we must overcome? Companies certainly consider how many people to hire at various salaries and employee benefits and for various positions. In doing so, employers typically hire from the general labour market those workers who fit their mix of occupational demands.

The economic theory underlying the demand for labour begins with this passive role for employers in competitive labour markets. Like perfect competitors in the product market who have no control over the market price, employers are 'wage takers' in the sense that they cannot pay less than the going wage for a specific skill. The human capital revolution pioneered by Jacob Mincer and Gary Becker extended the theory to incorporate investments in skill development by firms and workers. According to the theory (Becker 1964), the key distinction is between firm-specific training, which enhances productivity but only for the firm providing the training, and general training, which raises productivity of workers in both the training firm and other firms. Becker and other argued that firms will only pay for firm-specific training. Financing general training will not be cost-effective because of the risk the firm will not accrue sufficient benefits to offset training costs before other firms hire away the trained workers. Since the added productivity makes workers more valuable both inside and outside the firm, firms financing the training will be unable to recoup their investment by paying the newly trained worker a wage less than his or her newly enhanced level of productivity. Competitors will hire the worker away from the company providing training or bid up the trained worker's wage to the new productivity level. Employers may finance "general" training costs but only by paying lower wages.

Since the theory applies to all profit-seeking firms and income-maximizing workers, one would expect to find similar patterns of firm-based training investments across countries. But, in fact, the patterns vary quite widely. Employers in some countries provide little occupational training while employers in other countries undertake extensive general training for workers to gain occupational qualifications that can be used outside the firm. In the case of apprenticeship training, the extent of employer training is enough to reach two thirds of youth cohorts in Switzerland and Germany (Steedman 2010), but only about two percent of a cohort in the U.S. Even within countries, one can observe some supplying a considerable amount of training while others do not.

One possibility is that firms are generous in some countries and willing to pay for occupational training in the context of apprenticeships, while firms in other countries take a narrow perspective and are unwilling to bear the costs of training. Another is that institutions in some countries and industries provide the structure and in-depth information that is especially favourable to employer-led training. Also, incorporating more realistic elements into theory can potentially explain some why some firms supply substantial training and why others do not.

This analysis examines several research questions, including: 1) What modifications to human capital theory can help explain why firms offer general training, in the form of apprenticeship-based occupational training? 2) What are the barriers to training investments associated with the inappropriate accounting treatment of

human capital? 3) What does the empirical literature show concerning returns to employers? 4) Why might firms that were not offering apprenticeships begin to do so? The concluding section discusses the implications for policy initiatives aimed at expanding apprenticeship.

2 Modifications of the Theory

One rationale for providing general training is the role of imperfect and asymmetric information. Employers providing training are often in a better position to judge the worker's productivity than are outside employers (Katz & Ziderman 1990). Another rationale for employer-led general training is imperfect information and other market imperfections can allow employers to pay trained workers less than the gain in their productivity without losing them to other firms (Acemoglu & Pischke 1999). One reason is that the employers providing the training are in a better position to judge the worker's productivity than are outside employers. An employer knows only a modest amount about workers when they enter the firm. One way of learning more is to observe how they learn, especially on the job. Another possibility is that general skills complement specific skills. As a result, increasing general skills raises workers' ability to use their specific skills. Interestingly, transparent skill standards could erode the information advantage for employers (Greenhalgh 2002). Still, several studies show positive impacts of general training on firms' productivity and profitability (Barrett & O'Connell 2001; Bassi & McMurrer 2004; Hanssen 2007).

Another example of how providing general training can benefit firms comes from Cappelli (2004), who argues that imperfect information might be a reason to offer tuition benefits. It is difficult to sort workers whose qualifications are similar on paper. But when tuition benefits are offered, the applicants with more interest in learning relative to other applicants with the same paper qualifications are more likely to apply and use the general training. These workers may have more motivation and an unmeasured skills advantage. Cappelli (2004) finds evidence to support the notion that workers who take up tuition benefits are more effective than other workers with the same observed characteristics.

With respect to skill upgrading, employers can limit training to workers most likely to benefit and to stay with the organization. Recognizing that some critical occupational skills can only be learned at the workplace, employers may choose to undertake some training while collaborating with educational institutions and coalitions of organizations in the same industry. Because skill requirements and the best methods for learning relevant skills vary across occupations and industries, we would expect training patterns differ as well.

Still another issue is risk and uncertainty. Typically, employer investments in training are generally irreversible. Employers cannot take back knowledge or require reimbursements from workers after the fact. This irreversibility, combined

with uncertainty about productivity outcomes from training, has implications for evaluating employer returns to training investments (Jacobs 2007). In particular, the standard present value calculations do not necessarily serve as the correct guide. Instead, in an investment decision under uncertainty and irreversibility, one should take into account the option value of the additional trained worker. When the training is completed, the firm has the option but not the obligation to hire the trained worker and/or utilize the skills learned from training. This option value raises the firm's returns and increases the likelihood that they will invest in training. Leuven and Oosterbeek (2004) consider firm-specific investments in on-the-job training. Given uncertainty about the productivity returns from irreversible investments in particular workers, the firm's investment creates a real option that is especially valuable.

Other studies highlight the impacts of organizational attributes and strategies on worker training. For example, the incentive to train should be higher for those organizations that have to delegate decision-making, that are large and have high monitoring costs, and that promote from within instead of hiring from the labour market for high-level positions. Knoke and Kalleberg (1994) find that organizations that are large, promote from within, and have formalized job structures provide more worker training. Osterman (1995) shows that organizations make trade-offs between training existing workers and hiring workers with previously developed skills and that organizations train more when they use flat hierarchies, worker involvement, and teamwork and devolve decision making to the line level. Surprisingly, his estimates reveal no increase in training related to job ladders.

Firms can benefit in other ways from employer-led training. At least as far back as 1962, learning by doing has been incorporated into models of economic growth (Arrow 1962). Bauernschuster et al. (2009) document one mechanism affecting the firm and the economy: a positive impact of employer-led training on innovation. They first point out that,

Because of the rapidly changing environment of today's world in which human capital derived from formal education (schooling, vocational education) depreciates quickly, learning by doing, in the form of in-firm training, may be an additional way to continue to accumulate leading-edge knowledge. (Bauernschuster et al., 2009)

The authors use data from over 3,000 establishments in Germany who report on whether they introduced a new product or service in the past two years, newly adopted a product or service or enhanced an existing product or service. Information on training in the periods prior to the innovation period comes from questions about whether firms encouraged training by at least partly financing the training or by releasing workers for attending training. Using data on other firm characteristics as well as an identification strategy for causal inference, the authors find that a ten percentage point increase in training intensity translates into an 11 percentage point higher propensity to innovate.

Although several pieces of evidence show high returns to employer-led training, some studies are cautious about drawing causal conclusions. Bartel (2000) finds research from a variety of perspectives show significant benefits to employ-

er-led training, many of the studies do not measure the costs of training. Still, she concludes that the available evidence indicates high estimates of returns for employers.

A study of the impact of training on the productivity of British industries uses 14 years of panel data, an approach that allows the researchers to control for self-selection based on unobserved industry differences (Dearden et al. 2006). The authors find significant effects on productivity and wages. The results indicate a sharing of the productivity gains from training, with a one percentage point increase in increase in training leading to a 0.6 percent increase in value added per hour and about a 0.3 percent increase in hourly wages.

3 Accounting Treatment of Human Capital

One rarely noted issue is the inappropriate accounting treatment of human capital investments. Training investments, like other investments, incur costs in one year, but accrue benefits accrue over several years. In the case of physical investments, the income statement does not assign the full costs of the investment in the year the purchase occurs, but rather only those costs that reflect the amount of the asset used up during the current year's activity. In contrast, human capital investments undertaken in a particular year are fully expensed in that year. This policy reduces the after-tax costs of financial incentives for training. On the other hand, investments in human capital are not reflected in the balance sheet as an asset. As a result, the accounting information shows companies investing in human capital showing lower profits that would an accurate measure of the performance of firms.

To highlight the point, Bassi and McMurrer (2004) provide a simple example:

Consider two organizations that are identical in all but one respect: Company A makes substantial investments in skills, while Company B does not. What will be evident to any analyst comparing the companies' income statements is that Company A has higher overhead for selling, general and Administrative expenses, and correspondingly lower reported earnings, than Company B. What will not be evident, however, is that some of Company A's expenses are actually investments in future productivity. Consequently, Company A's stock price would be expected to be lower – at least in the short run – than Company B's. The decision of Company A to invest in employee skills thus occurs despite pressures from financial markets.

Since stock prices depend more on these accounting profits than on real value, the market underestimates future gains in the high training firms but over time, the added profits associated with training materialize, accompanied by a higher stock price.

In 2012, the Society for Human Resource Management (SHRM) and the American National Standards Institute (ANSI) drafted 'Guidelines for Reporting on

Human Capital to Investors'. The guidelines called for financial statements to include key indicators concerning the work force that are relevant to economic performance. As the report pointed out,

Human capital has a material impact on organizational performance and thus is of interest to investors. Establishing credible and durable measurements of human capital creates a more complete picture of the capability of an organization to create value for customers and shareholders.

According to the report, measuring human capital is a difficult task, but some measures can help investors understand strengths of an organization. Expenditures on employer-provided training represent investments the firm is making in return for future productivity. The report recommends isolating: compensation cost of employees providing and receiving training, the costs for third party trainers, travel costs, facility costs, software purchases, courseware purchases, and tuition reimbursements. The report does not go so far as to count training expenditures as depreciable assets on the balance sheet. Still, the clear presence of this and other employee-related indicators might affect company valuations and thus provide an incentive to top executives to increase training.

A former President of a General Electric division remarked (Echols 2005),

Accounting for human capital investments must become more like capital investment accounting... (Echols 2005)

Currently, financial reports that expense training costs may distort company decisions away from human training. Under alternative approaches, training may begin to look more profitable and increase in scale.

4 Employer Investments in Apprenticeship Training

Firms recognize that investments in apprenticeship training ultimately provide workers with the skills required to qualify for certification in an occupation, certainly skills that can be applied in other firms. Yet, while many expect firms to avoid investing in general training, a large number of employers invest in training workers for occupational skills that yield a portable credential that has value outside the training firms. The traditional human capital theory can account for these investments only by assuming that workers pay for much of the training by foregoing some part of their wages. With modifications of human capital theory, however, investments in apprenticeship begin to make sense.

But, why do patterns of apprenticeship investment vary so widely across countries? Perhaps in some countries, employers see that preparing workers with occupational skills is a job for the school system while others believe that having enough highly skilled workers requires their own investments. One potentially important factor is whether the government does or does not pay for all or most of the academic component of apprenticeship training. While in most countries with

strong apprenticeship systems, the government pays the costs of related classroom instruction, U.S. firms are responsible in whole or in part for even the academic component of the vocational training. At the same time, firms in countries with weak apprenticeship systems expect the educational system to prepare workers with occupational skills required at the workplace. Often, however, the training outcomes yield graduates who are not well prepared for the realities of the workplace, partly because of their lack of work experience in the relevant field.

Another possible explanation is the presence or absence of a structured system that incorporates skill standards, widely dispersed knowledge and information about apprenticeship investments, clear expectations of apprentices and employers, well-specified occupational credentials, public support through funding of at least the classroom instruction, and a societal recognition of the legitimacy of a 'dual' system that combines work-based with classroom learning.

Labour restrictions can play a role, since licensing often requires training of the type achieved through an apprenticeship. However, such restrictions vary in ways not always consistent a link to high levels of apprenticeship. A good example is England, where apprenticeship places have increased dramatically without any change in licensing requirements.

The high penetration of apprenticeships in countries with centuries of experience with apprenticeship (Austria, Germany and Switzerland) suggests to some observers that cultural traditions and social norms play central roles in explaining differences in apprenticeship use. Still, traditions and norms cannot explain the scale of apprenticeship nor the reason why some firms hire five apprentices and others hire 15 or 25. Still, determining whether firms hire apprentices in a particular year and how many they hire is likely to depend on economic factors.

What, then, are the economics of apprenticeship from the standpoint of firms? What are the estimates of economic returns to employers when applying standard investment tools? Like most investments, apprenticeship investments require up-front costs but yield a flow of future gains over subsequent years.

The employers' main costs include:

- Wages and benefits of apprentices plus any payroll taxes;
- Wages, benefits, and payroll taxes paid for the time trainers and other staff devote to the apprenticeship program;
- Use of materials and equipment;
- Costs of setting up the apprenticeship;
- Recruiting and selecting apprentices; and
- Employer contribution to the costs of classroom training.

The main categories of benefits for employers include:

- Added value contributed by the apprentices to production;
- Reduced recruitment and training costs;
- Ability to pay slightly less than the worker's productivity as a fully trained worker because of the worker's familiarity with the firm and the worker's spe-

cific training and knowledge of the intricacies of the firm's technologies and social interactions;

- Reduced risk of not finding adequately and specifically skilled workers to replace retirees and others leaving the firm;
- Option value of extra skilled workers that the firm trained on its own; and
- Gains in innovation accruing from the apprentice's in-depth understanding of the work processes within the firm and the quality of training.

Not all of these costs and benefits are easy to measure. Nonetheless, researchers have managed to estimate the primary costs and benefits experienced by large numbers of apprenticeship sponsors in several countries. The most extensive studies have examined German and Swiss firms. One analysis by Muehleemann et al. (2010) used data from surveys of 1,825 German firms and 1,471 Swiss firms. Wages of trainers and of apprentices are the main gross costs of apprenticeship programs, but the study also measured the wages of management and training personnel, the wage costs of apprentices, time at the workplace, share of apprentices' workplace time devoted to tasks normally undertaken by unskilled and skilled workers, and the relative productivity of apprentices compared to regular workers.

Apprenticeships vary widely in gross and net costs. On average, the gross costs per year amounted to 15,500 € for German firms and about 18,000 € for Swiss firms. Although Swiss firms spend more than German firms, they derive substantially higher benefits from the value added by apprentices. Swiss firms gain over 19,000 € per year, more than double the 8,000 € in benefits that German firms attribute to the value of production generated by apprentices. For a three-year apprenticeship, Swiss firms are thus able to recoup the 54,400 € cost with benefits of 57,100 €, while German firms experience a 46,600 € cost but realize only 24,000 € in benefits. These averages involve net benefits for some firms and net investment costs for others. Muehleemann & Wolter (2014) report that about 30 percent of German firms and 60 percent of Swiss firms recoup more in benefits than they pay in costs.

Why do Swiss firms – where the wages of management, skilled and unskilled workers, and even apprentices themselves are generally higher than in German firms – show a small net benefit, while for the average German firm costs exceed benefits? Higher Swiss costs are offset by substantially higher returns for several reasons. First, apprentices are at work for more days in Switzerland than in Germany. Over the course of a three-year apprenticeship, Swiss apprentices are at work an average of 468 days, compared to 415 for their German counterparts. Second, when in the workplaces, Swiss apprentices devote an average of 83 percent of their time to productive tasks, compared to only 57 percent for German apprentices, who engage more in practicing tasks and in coursework. Third, the differences in time spent on tasks with no direct value to the firm are significant. Swiss apprentices allocate only 13–21 percent of their time on these tasks, while in Germany these tasks take up 31–57 percent of the time.

A fourth factor is that Swiss apprentices earn wages that are particularly low as a percentage of the wages of a fully qualified worker. In fact, the apprentice wages are so low that Swiss apprentices may bear some of the general training costs by working at a wage lower than their wage in a non-apprentice job. Becker certainly allowed for the cost burden of general training falling on workers.

One striking feature of apprenticeship programs in both countries is how quickly apprentices advance through their training and move from unskilled to skilled tasks. In Switzerland, the productivity of apprentices rises from 37 percent of a skilled worker's level in the first year to 75 percent in the third (final) year. The increase in Germany is just as rapid, increasing from 30 percent to 68 percent of a skilled worker's productivity over the apprenticeship period. Thus, in both countries, apprentices accumulate substantial and similar levels of human capital. Still, the data from Muehleemann's study suggest that nearly all German firms with apprenticeships (93 percent) incur net costs, while a majority of Swiss firms (60 percent) more than recoup their costs.

Not all recent studies indicate that German firms actually experience higher net costs for their apprenticeship investments. For example, Mohrenweiser and Zwick (2009) find that for many occupations, the gains to German firms during the apprenticeship period more than offset the costs. They draw their conclusion by estimating the impact of apprenticeships on company profits. For apprenticeships in trade, commercial, craft and construction occupations, their estimates show a positive impact on profits. However, in manufacturing, the effect on current profits is negative, indicating a positive net cost.

An extensive study of Canadian employers sponsored by the Canadian Apprenticeship Forum (2006) estimated employer costs and benefits of apprenticeships in 15 occupations. The study drew on responses from 433 employers, with at least 16 per occupation. All were four-year apprenticeships. The average gross costs ranged from about C\$78,000 for cooks to C\$275,000 for construction electricians. Average in-program benefits – measured as the revenue generated by the apprentices – varied widely as well, ranging from C\$120,000 for cooks to C\$338,000 for construction electricians. For all 15 occupations, employers earned a positive return to their apprenticeship investments during the training period. The average benefit was 1.38 times the average cost. Any post-program benefits would add to the economic returns.

Post-training benefits of apprenticeship programs are especially important, but are not easy to quantify. They include reduced recruitment costs, training related to the company's specific procedures and enhanced wage stability (because outside hires can upset the relative wage balance). A recent paper by Blatter et al. (2015) highlights the incentive to train stemming from hiring costs that are high and that rise with the number of hires. The authors cite evidence that the costs of a skilled hire can be one to two quarters of wages. Using data from Switzerland, they find that a one standard deviation increase in average hiring costs is associated with more than half of a standard deviation increase in internal training in the form of added apprenticeship positions. A survey of German employers by Beicht

and Ulrich (2005) finds savings in recruitment and training costs averaged nearly €6,000 for each skilled worker trained in an apprenticeship and taken on permanently. The authors also cite other benefits – including reduced errors in placing employees, avoiding excessive costs when the demand for skilled workers cannot be quickly filled, and performance advantages favouring internally trained workers who understand company processes over skilled workers recruited from the job market. Taking all of these benefits into account appears to make apprenticeship investments a net gain for employers.

Another benefit to firms rarely captured in studies is the positive impact of apprenticeships on innovation. Innovations are critical to success in a competitive environment. Well-trained workers are more likely to understand the complexities of a firm's production processes and therefore identify and implement technological improvements, especially incremental innovations to improve existing products and processes. A study of German establishments by Bauernschuster et al. (2009) documented this connection and found a clear relationship between the extent of in-company training and subsequent innovation.

Summarizing the best studies of apprenticeship, Muehlmann and Wolter (2014) have concluded:

Empirical evidence shows that in a well-functioning apprenticeship training system, a large share of training firms can recoup their training investments by the end of the training period. As training firms often succeed in retaining the most suitable apprentices, offering apprenticeships is an attractive strategy to recruit their future skilled work force. In addition – as long as skills are standardized and nationally certified – those apprentices leaving the training firm after graduation ensure that other firms can recruit a sufficient number of skilled workers from the labour market. (Muehlmann & Wolter 2014)

Employer expressions of support for apprenticeships are quite common. Especially striking are the positive attitudes of employers that have recently adopted apprenticeship programs. England and Wales are particularly interesting in this regard because of the large increase in the number of firms there that are now offering apprenticeships (well over 100,000). A study of more than 4,000 employers found that nearly 80 percent were satisfied with their apprenticeship program, while only six percent were dissatisfied (IFF Research 2012).

Nearly three in four employers mentioned improved productivity as a primary benefit, with most highlighting other outcomes likely to improve profitability, product or service improvements, better staff retention, and the introduction of new ideas and innovations. Over 40 percent of employers reported that apprenticeships helped them win new business. About 80 percent of employers report that they expect to continue offering apprenticeships and another 11 percent are considering doing so but are not certain.

Sponsors of registered apprenticeship programs report high levels of satisfaction with this approach to skill development (Lerman et al. 2009). In a representative survey of 947 sponsors, 97 percent stated they would recommend the program to others, with 86 percent recommending it “strongly”. The benefit cited by over

80 percent of sponsors was the apprenticeship program's role in meeting the demand for skilled workers. Another major benefit was that the apprenticeship programs show reliably which workers have the skills needed. Other benefits, cited by 68 per cent of sponsors as very important, were raising productivity, strengthening worker morale and pride, and improving worker safety. A majority of sponsors also reported benefits in worker recruitment and retention and in meeting licensing requirements.

One concern about encouraging intensive, employer-led training is that firms will be unable to recoup the costs of training because others firms will hire the newly skilled workers away from the training firm or drive up their wages. 'Poaching' is the name of this process. Some apprenticeship sponsors viewed poaching as a significant problem, but surprisingly, 46 percent of sponsors did not perceive it as a problem at all. Still, even among sponsors who perceived poaching as a problem, about 85 percent strongly recommend apprenticeship to others.

5 Barriers to Employer-Led Training

Given the apparent benefits of apprenticeship and other forms of employer-led training, why don't employers do more of it? Are cultural and legal barriers sufficient to deter employers from starting apprenticeship programs? Are countries with flexible labour markets and few traditions of apprenticeship doomed to provide limited numbers of apprenticeships? Are the structural barriers so strong as to prevent expansions of apprenticeships?

A common response by many employers not currently offering apprenticeships is in line with Becker's theory of the rational fear of losing their investments because of other firms will bid up the worker's wage, once the worker becomes well trained and more productive. Another commonly cited barrier is the difficulty of measuring the costs and benefits of training. When a skilled worker spends time training a less-skilled worker, the lost production is not always clear. Measuring benefits is often even harder. Even the category of gains may vary by firm. For some, the gains may take place when fewer serious accidents or medical errors take place; for others, in the form of lower expenses on maintenance; and for still others, through higher profitability attained through innovation.

A third barrier to employer-led training in general is the lack of knowledge about what type of training will work best for the organization. As Bassi (2011) points out, the characteristics of training programs that yield the highest return on investment (ROI) vary with the size, maturity, industry, and other business needs. Employers thinking about incorporating occupational training, especially formal occupational training in the context of apprenticeships, must determine content standards (what completers should be able to accomplish), a curriculum, the role of courses vs. work-based learning, the effectiveness of mentors, and the methods for determining whether the trainee is achieving sufficient mastery in an occupa-

tion to graduate. Measurement and evaluation of training impacts is difficult, although several approaches have been developed for doing so (Bassi & McMurrer 2004).

A fourth barrier is scale. Setting up a formal training program and exposing workers to a wide range of tasks is especially difficult for small companies. They often lack the expertise and the cost per worker becomes prohibitive since the training will cover few workers. These problems can be overcome with the appropriate public and private institutions, such as public technical assistance in setting apprenticeships or consortia of employers in the same industry sector organized by private intermediary organizations of government entities. In some cases, a major firm can assist in the training efforts of small firms that are customers or suppliers. One example is the development of Cisco Academies, which use classroom training and on-line learning to train students and help them prepare for industry-recognized certifications in information and communication technology careers.² Members of England's Association of Employment and Learning Providers successfully coordinate apprenticeship training for groups of small firms.³

6 Marketing, Knowledge of and Technical Assistance for Apprenticeships

Observers commonly assume that firms have chosen rationally not to develop apprenticeships and ask the following question: "...if it makes sense for firms to hire apprentices, why aren't they doing so today?" The assumption of rationality is generally a powerful explanation and one that requires special evidence to overcome.

One test of this rationale for low use of apprenticeships is to examine how firms respond to learning about apprenticeships and how they can affect business operations. Another barrier to overcome is the absence of a well-specified system, with clear standards and government extensively providing relevant classroom-based instruction, limits apprenticeship expansion.

Two recent developments can be thought of as natural experiments testing the potential role of marketing, increasing information and technical assistance. If firms have been behaving with knowledge and self-interest in choosing not to offer apprenticeships, then changes in marketing, information, and technical assistance would presumably do little to stimulate firms to alter their hiring and training practices. However, if firms respond positively to marketing, information, and technical assistance by expanding apprenticeships, then firms can be convinced of

² See <http://www.cisco.com/web/learning/netacad/academy/index.html> for a description of the program.

³ See Making a Difference, Association of Employment and Learning Providers, Ltd, Bristol, U.K. <http://www.aelp.org.uk/news/general/details/aelp-strategic-prospectus-making-a-difference/>

the value added by apprenticeships. Put another way, just because firms did not see apprenticeships as profitable in the past does not necessarily mean that firms will not provide apprenticeships in the future when providing with appropriate tailored information about how valuable apprenticeships can be to the firm.

The interventions in South Carolina within the U.S. and England show that many companies can be persuaded to provide apprenticeship training, once the information and organization skills become available. South Carolina's successful example involved collaboration between the technical college system and a special unit devoted to marketing apprenticeship. With a state budget for *Apprenticeship Carolina* of \$1 million per year as well as tax credits to employers of \$1,000 per year per apprentice, the program managed to stimulate more than a six-fold increase in registered apprenticeship programs and a five-fold increase in apprentices. Especially striking is that these successes – including 4,000 added apprenticeships – took place as the economy entered a deep recession and lost millions of jobs. The costs per apprentice totalled only about \$1,250 per apprentice calendar year, including the costs of the tax credit. Although apprentices often can access South Carolina's Technical College system and attend at low cost sensible alternative for the classroom component, generally, the public sector in the U.S. pays little or nothing for the academic component of apprenticeships.

The marketing involved both statewide campaigns but more importantly sales and technical expertise provided to individual firms. The program provides free consulting so that firms learn how apprenticeships can work well in their organizations. The staff is made up of people with an excellent ability to listen to firms about their needs and, where appropriate, sell firms on how to build a talent pipeline through the use of apprenticeships. *Apprenticeship Carolina* works closely with the Economic Development units in trying to persuade firms that locating in South Carolina will allow them access to a good training system involving technical colleges and a structure for learning about and expediting apprenticeship training.

The director of *Apprenticeship Carolina* reports that once employers fully understand apprenticeship training, it becomes easy to convince them to start apprenticeship programs at their firm. In fact, once firms meet with an official representative from *Apprenticeship Carolina*, about 70-80 percent of firms have started apprenticeship programs.

Britain's success in expanding apprenticeships from about 150,000 in 2007 to over 500,000 in 2013 offers another example for how policies can stimulate apprenticeships, even among firms that previously had no interest in and little knowledge about apprenticeships. The National Apprenticeship Service and industry skill sector councils have provided national marketing and general information. Leaders from all political parties have strongly endorsed apprenticeship expansion. In addition, the British government has offered incentives to local training organizations to persuade employers to create apprenticeships. In addition, England's apprenticeship system builds to some extent on the concepts and language of the National Vocational Qualification system.

As in South Carolina, England relies heavily on sales units within these training organizations to work closely with individual employers as a kind of retail marketing. Since 2007, private sector training providers and Further Education colleges (FE) persuaded over 100,000 companies to adopt apprenticeship training. Incentives are provided to small and medium enterprises at a rate somewhat higher the South Carolina tax credit. For all employers, the government pays a proportion of the training costs for apprentices, depending on their age; 100 percent of the training costs if the apprentice is 16-18, 50 percent of the training costs if the apprentice is 19-24, and up to 50 percent of the training costs if the apprentice is aged over 25. The results in England show that providing firms with useful information, help in making the transition, and funding for at least the related courses, many firms will start or increase apprenticeship programs.

Overall, the evidence is strong that it is feasible to stimulate firms to hire and train apprentices at scale even in countries without the cultural traditions and labour regulations that are said to be prerequisites for a robust apprenticeship system. Moreover, the apprenticeship expansions are likely sustainable given the results showing high returns to firms that use apprenticeship as a major part of their talent management strategies.

7 Summary and Policy Implications

Robust apprenticeship systems can enhance skills and wages, reduce youth unemployment, raise economic mobility, increase the quantity and quality of middle skill careers, and strengthen the U.S. manufacturing sector. The experience of several European countries documents many of the benefits of apprenticeship systems and offers lessons for what a large system requires. Any such system must rely on firms and other employers to choose to offer apprenticeships. But what causes some employers to offer apprenticeships while other employers do not?

This section summarizes answers to this question and to more specific the research questions. The first findings are that theoretical modifications can justify apprenticeship investments based on imperfect information, imperfect competition, the joint production of skill and output, and limiting the risks involved in having too few skilled workers. One theoretical barrier to investing in apprenticeships is the failure to treat human capital as an asset on a firm's balance sheet. The empirical literature on apprenticeship investment, though limited, suggests solid returns for employers, partly because the apprentice's contributions to output allow firms to recoup most or all of the firm's outlays on apprenticeship. Finally, the chapter describes a successful outreach to firms showing the importance of direct marketing and information in moving firms to begin apprenticeship programs.

While expanding apprenticeship in countries with modest levels poses challenges, this paper argues that firms can be attracted to participate without substantial budget outlays. The key components include a structure for skill standards,

methods for assessments apprentices and curricula, marketing and information efforts at the national and subnational levels, a sales and technical assistance initiative to help firms see the value of apprenticeships in their own operations, modest direct incentives to firms to participate, and at least partial funding for the academic components of apprenticeship. Developing these elements requires political support, ideally the type of bipartisan support for apprenticeships on display in England.

Several questions remain about jumpstarting a system to expand in the U.S. and other countries. One quandary is whether to focus almost entirely on youth or to include young adults at least through their late 20s. Employers generally want more mature workers but are willing to accept youth since the wage required to attract them into the program is lower for youth. Another question is: what are the roles that industry associations will be playing?

One lesson from Germany and Switzerland is the effectiveness of integrating apprenticeships into late secondary or early post-secondary education. Such an approach has several advantages. Pay can be a lower share of skilled worker wages for students in their teens because competing jobs pay less than for older workers. Moreover, it is acceptable to pay apprentices a low wage when most are still living with their parents. Swiss apprentices commonly earn only about 20 percent of the wage of a fully skilled worker.

Governments are likely to pay for apprentice-related courses in a period when schooling is provided free on a universal basis. Guidance can be economically provided to students. And young apprentices are able to learn good habits right away instead of having to unlearn bad work habits. Another lesson from the German and Swiss experience is the importance of credible skill standards and systems for verifying the skills of apprenticeship completers and for training trainers. Such a structure streamlines the process by which firms begin providing apprenticeships.

Drawing on these and other lessons can contribute to building scale into apprenticeship in the U.S., thereby yielding substantial gains for workers and firms. If the U.S. were to reach the share of apprentices in the U.S. workforce as in the workforces Australia, Canada, and England, there would be 4 million apprentices, about 10 times the approximately 400,000 today. With effective marketing and public support for related classroom training, U.S. employers would see how quickly their training investments pay off and would likely create far more apprenticeships than they currently do. The results for workers would be higher wages, more rewarding careers, and increased social mobility. American firms would realize productivity gains and increases in innovation. Overall, an expanded apprenticeship system would improve substantially the economic and social welfare of the U.S.

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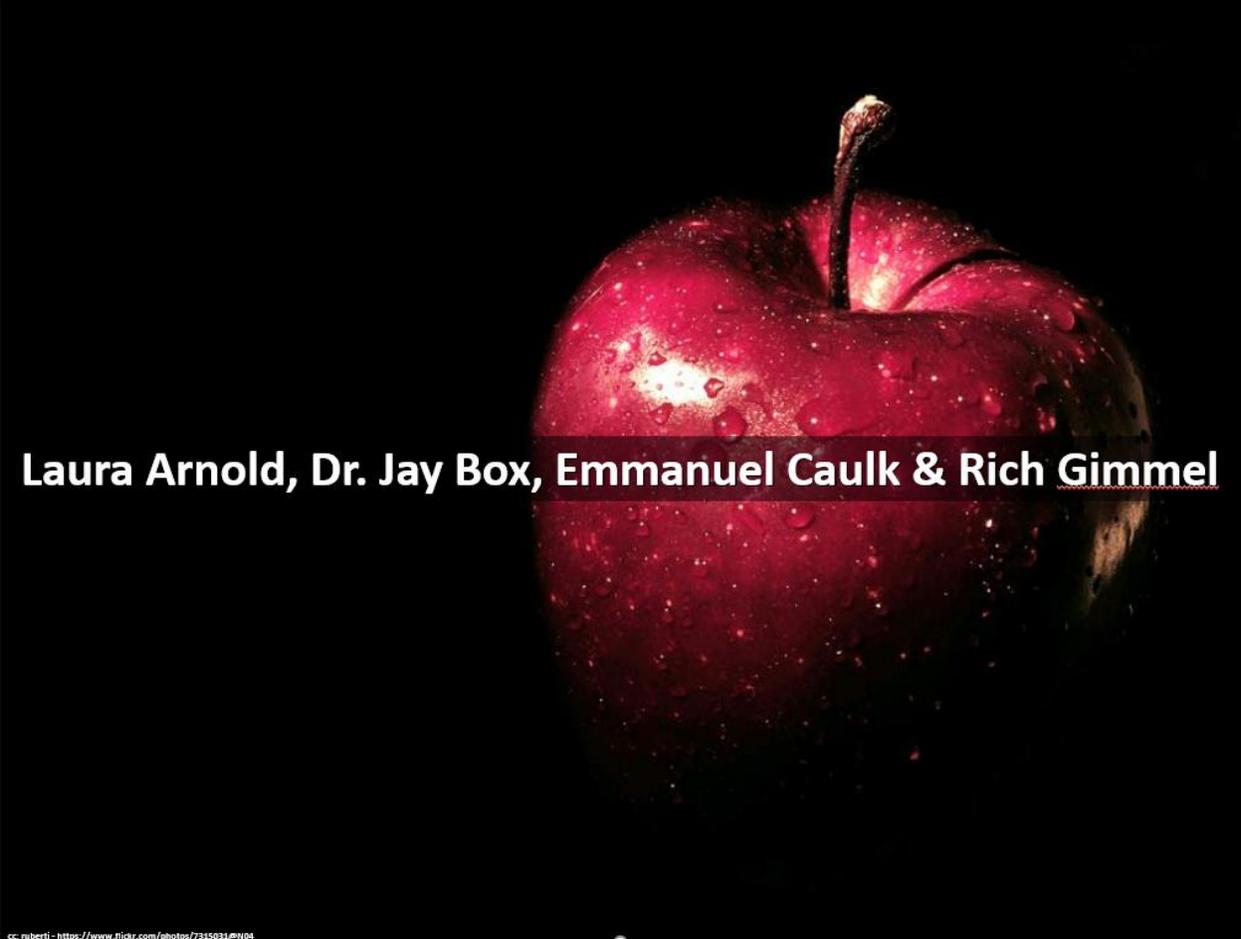
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Education

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U.S. Department of Education

**Opportunities for Connecting
Secondary Career and Technical
Education (CTE) Students and
Apprenticeship Programs**

OPPORTUNITIES FOR CONNECTING SECONDARY CAREER AND TECHNICAL EDUCATION (CTE) STUDENTS AND APPRENTICESHIP PROGRAMS

Prepared for the
U.S. Department of Education
Office of Career, Technical, and Adult Education

By
Kate Blossveren Kreamer, Advance CTE
Andrea Zimmermann, Advance CTE

CONTRIBUTORS
Charlotte Cahill and Amy Girardi, Jobs for the Future
Audrey Denney, Seth Derner, and Scott Stump, Vivayic, Inc.
Laura Rasmussen Foster and Steve Klein, RTI International

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U.S. Department of Education

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Office of Career, Technical, and Adult Education

Kim R. Ford
Deputy Assistant Secretary Delegated the Duties of the Assistant Secretary

June 2017

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EXECUTIVE SUMMARY

Labor market projections indicate a growing gap in the supply of qualified employees for middle skills jobs—those that require training beyond high school but less than a four-year degree. Shortfalls are expected to be particularly acute in fields critical to our nation’s economic competitiveness, such as computer technology, nursing, and advanced manufacturing. Recognizing the contribution that apprenticeship can make in preparing a skilled workforce, the federal government has launched several initiatives to expand existing and launch new training programs in high-growth, high-tech industries.

The U.S. Department of Education’s Office of Career, Technical, and Adult Education (OCTAE) has supported these federal system-building efforts by identifying effective strategies to deepen and diversify the supply of qualified apprentices. In particular, OCTAE has sponsored research to explore the potential for connecting secondary career and technical education (CTE) students with apprenticeship training opportunities. This activity reflects the unique, yet crosscutting purposes of the two programs.

Both CTE and apprenticeship combine classroom instruction with workforce training—integrating rigorous academic, technical, and employability skills within a career context. Program curricula are vetted by employers to ensure that coursework prepares students for entry into in-demand fields and are aligned with current industry standards. Classroom instruction is reinforced by hands-on application to give learners a deeper understanding of the field. Students also may have options for earning college credits and industry-recognized credentials that will prepare them for immediate employment as well as postsecondary enrollment.

For this project, eight programs were selected for on-site visits with local program staff, industry and labor representatives, students and parents, state leaders, and other key stakeholders. Sites hosted a mix of programs, ranging from those relatively new to connecting CTE and apprenticeship programs to those with established programs, as well as those offering training in new industry fields.

This report profiles each program’s history, structure, and lessons learned. The report also synthesizes observations across the sites to support state and local leaders in connecting high school CTE students with apprenticeships.

STRATEGIES TO CONNECT CTE AND APPRENTICESHIP

The report focuses on three types of apprenticeship programs:

- **Apprenticeship**—a formal, on-the-job training program that typically has five components: 1) employer involvement; 2) on-the-job training; 3) related technical instruction; 4) paid work experience; and 5) award of a portable, nationally recognized industry credential. A subset of these programs, termed “registered apprenticeship,” additionally must meet national industry standards and be registered with the U.S. Department of Labor (DOL) (or a federally recognized state apprenticeship agency).
- **Youth Apprenticeship**—a program that is designed specifically for individuals aged 16–18, and is connected to an adult apprenticeship. These may be registered with the DOL (or federally recognized state apprenticeship agencies), and often include and demonstrate the five components of a registered apprenticeship. While the term “youth apprenticeship” is used by some states to describe other work-based learning programs, this report defines youth apprenticeship more specifically.
- **Pre-apprenticeship**—a program or set of strategies designed to prepare individuals for entry into an apprenticeship program. Instruction may vary in length and scope, and may include basic skills training, academic skills remediation, or an introduction to the industry. Completers may be accorded preferential



consideration for entry into an apprenticeship program and/or apply time served or credits earned toward fulfilling program requirements.

The eight selected programs are categorized broadly as follows:

Program Name	Location	Career Cluster(s)	Year Created	Participants (2014-15)
<i>Registered Apprenticeship</i>				
Apprenticeship Catawba	Hickory, North Carolina	Manufacturing	2013	26
<i>Youth Apprenticeship</i>				
Charleston Youth Apprenticeship	Charleston, South Carolina	Hospitality and Tourism	2015	13 (in 2015-16)
<i>Pre-apprenticeship</i>				
Bayless Floor Layers Middle Apprenticeship Program	St. Louis, Missouri	Architecture and Construction	2004	14
Edward J. Malloy Initiative for Construction Skills	New York City, New York	Architecture and Construction	2001	135
Green Academy at Salinas High School	Salinas, California	Architecture and Construction	2014 (when program started using union curriculum)	117
Puget Sound Skills Center Construction Technology Program	Seattle, Washington	Architecture and Construction	2006	24
Tech Ready Apprentices for Careers in Kentucky (TRACK) – Dr. Schneider Automotive Systems	Russell Springs, Kentucky	Manufacturing	2014	4
Upper Valley Career Center School-to-Apprenticeship	Piqua, Ohio	Architecture and Construction; Manufacturing	Late 1990s	24

A Continuum of Connections

Sites took various approaches in connecting secondary CTE to apprenticeship, with programs varying across two dimensions: the degree to which *secondary CTE students' instruction aligns with apprenticeship training* and the extent to which *programmatic requirements articulate with apprenticeship* to ease student entry into programs. Figure 1 places each study site along the continuum of approaches educators may take for *instructional alignment* and *program articulation*.

Instructional Alignment

The degree of instructional alignment varied across the study sites, with four distinct approaches observed.

- **Full**—Students receive instruction tailored to address the entry requirements of an apprenticeship, and coursework fulfills students' high school graduation requirements as well as the performance expectations of an entering apprentice.



- **Embedded**—Apprenticeship skills training is integrated into a student’s CTE program and may be applied toward fulfilling course credit and high school graduation requirements. Students may also receive technical instruction that equips them for educational and career opportunities beyond apprenticeship.
- **Substituted**—All apprenticeship training is delivered outside the secondary school setting, typically by a postsecondary education partner or program intermediary. Students may, however, receive some high school and/or early postsecondary credit within their CTE field of study, with the degree of recognition varying by site.
- **External**—All apprenticeship instruction is delivered outside the secondary school setting. Students receive no educational credit, though they may apply hours worked toward fulfilling the entry requirements of an apprenticeship or be positioned for preferred entry.

Program Articulation

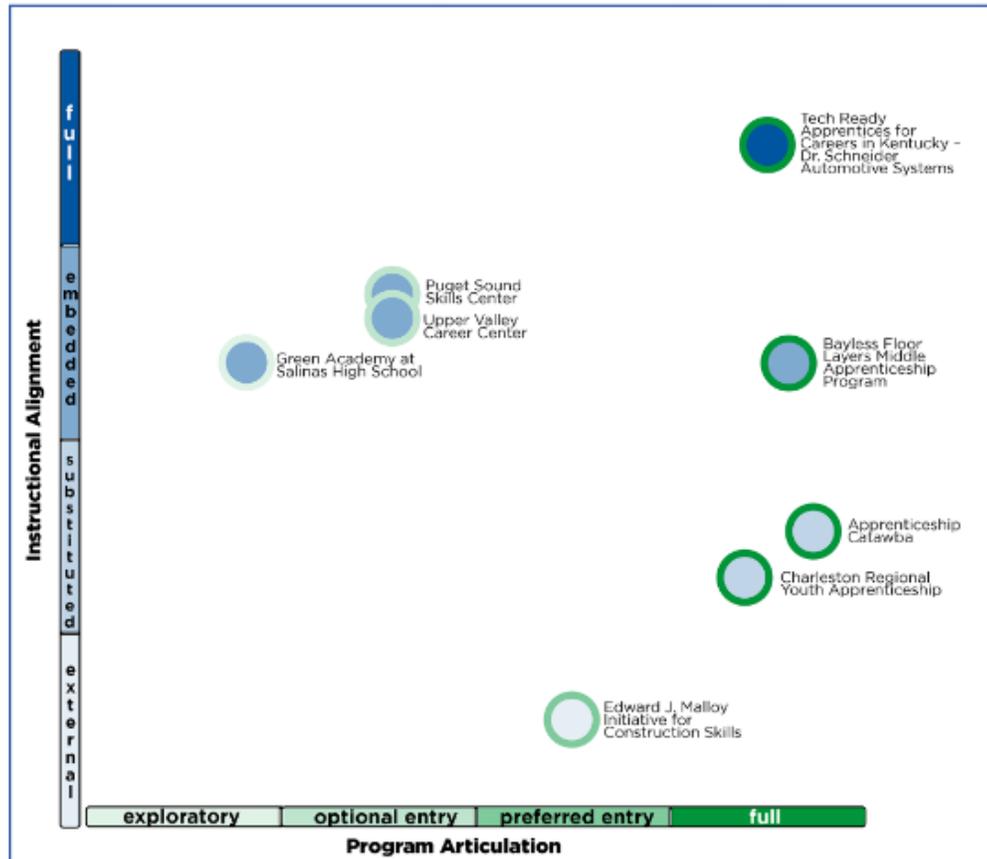
The ease and seamlessness of students’ transition from secondary CTE to apprenticeship varied across the sites, driven by the programs’ goals and designs. Four degrees of articulation were observed across study states. These include:

- **Full**—There is no distinction between a CTE program and apprenticeship program. Students are fully enrolled as apprentices or pre-apprentices while in high school and, upon their graduation, continue on as apprentices, with all credits and hours counting toward full program completion.
- **Preferred Entry**—Students participate in programs that prepare them for entry into an apprenticeship, though they are not enrolled as apprentices. Per formalized agreements, referred entry may be granted to students who complete specific requirements, and may apply educational credits or hours worked toward an apprenticeship.
- **Optional Entry**—Students participate in programs that may prepare them for entry into an apprenticeship but are not formally enrolled. Programs typically do not guarantee students a direct pathway to an apprenticeship program but rather are designed to prepare students for multiple post-graduate opportunities, including apprenticeship.
- **Exploratory**—Students participate in programs that allow them to explore career options, which may include entry into a pre-apprenticeship or apprenticeship program, but they receive neither credit toward their program nor preferential consideration for entry.

There are tradeoffs to each approach. Greater training specificity may narrow CTE students’ learning experience but increase their benefits and options in apprenticeships, which are occupationally specific. Students with broader skills training may have fewer post-program benefits directly aligned with apprenticeships but may have a better sense of the range of career options open to them, which may include apprenticeship. Readers are encouraged to use the taxonomy to direct their reading of site visit profiles and to consider the benefits and drawbacks of sites’ approaches to alignment and articulation.



Figure 1: Degree of instructional alignment and programmatic articulation between CTE and apprenticeship in study sites



CROSS-SITE TAKEAWAYS

Despite the unique features of each study site, some crosscutting takeaways were observed in program design, program effectiveness, student and parent engagement and communications, financing, and equity and access.

Program Design

There is no inherently “right” or “wrong” approach to connecting CTE students to apprenticeship programs. Study sites were located in communities with varying geographic, socioeconomic, and resource characteristics, and varying state administrative or legislative policies, all of which affected program structure.

- **Programs should be aligned to workforce demand**—Programs should account for state, regional, and local employment opportunities within in-demand fields for which there are sufficient employment options, be they in an apprenticeship program or related field.



- ***Buy-in must come from all sides***—Effective programs require meaningful collaboration from all partners. Teachers, employers, parents, and students must see the value of their participation if the program is to persist over time.
- ***Employers need to drive the process***—At most sites, the impetus for the program formation came from employers and/or labor associations seeking to bolster their pipeline of workers.
- ***No one size fits all in designing partnerships***—There is no minimum or maximum number of students who should participate in a program. Program size is and should be a function of regional demand and available placements with apprenticeship sponsors, although some sites are leveraging employer consortia to offer more placements for students.

Program Effectiveness

Both qualitative and quantitative measures need to be considered when evaluating the success of programs' efforts to align CTE and apprenticeships.

- ***Use both short- and long-term metrics to gauge program value and illustrate program effectiveness***—Beyond enrollment and general employer satisfaction, many sites had not yet developed the long-term metrics necessary to quantify the benefit of these connections. Additionally, for programs where apprenticeship was one of multiple pathways, the number of students who continued on in a chosen pathway was relatively low, although high school graduation and postsecondary placement rates were high.
- ***Program enrollment alone is not an appropriate measure of effectiveness***—Sites' capacity to scale up enrollment often is dictated by the number of placements that employers are able to support. Therefore, it is important to analyze what happens to students once enrolled to determine how effectively programs are preparing them for apprenticeship and other post-program options.
- ***There are challenges with collecting and sharing data across systems***—Sites often experience challenges collecting outcomes data for students, due in part to the lack of a single or connected reporting infrastructure connecting the kindergarten through 12th grade (K-12) and postsecondary education and workforce systems.

Student-Parent Engagement and Communications

Successful programs must engage a number of key audiences, including students and parents. The eight sites offered the following examples of different ways to engage students and parents through recruitment and marketing efforts:

- ***Educate parents and students on participation benefits, including postsecondary opportunities***—Site leaders all reported the need to overcome negative perceptions connected to both CTE and apprenticeship. Strategies for addressing these challenges focused on publicizing program benefits through the creation of communications materials, and the hosting of public events, such as apprentice signing day celebrations and workplace tours.
- ***Market postsecondary opportunities***—Messaging postsecondary connections helped to engage students and parents. Programs that included early postsecondary credit or delineated clear postsecondary pathways reported these were selling points with both parents and students.
- ***Attract students to new fields/innovative programs***—Apprenticeship has the potential to work in many industries. Since CTE programs span industry fields, educators reported attracting new types of students in expanding opportunities into new, nontraditional fields such as hospitality and IT.



Financing

Securing stable resources is critical to maintaining program operations. Aligning CTE programs with apprenticeship entails leveraging public funding, as well as funding provided by employer sponsors and other partners. Examples of this are provided as follows:

- **Leverage existing educational resources**—Study sites used varying funding strategies to support their programs, including local contributions, state secondary and postsecondary education formulas, and federal *Carl D. Perkins Career and Technical Education Act of 2006* resources.
- **Higher wages can help attract students**—Students participating in apprenticeships often earned wages that exceeded the state minimum wage or early postsecondary credits that carried a financial benefit.
- **Offer financial incentives to employers**—While tax credits may not sway a larger company to participate, these and other financial incentives were seen as a successful way to convince management in smaller businesses that participation would be, at a minimum, cost neutral.

Equity and Access

All sites experienced challenges around recruiting and providing access for nontraditional students and removing access barriers, most notably transportation to and from work placements and employers' concerns about hiring minors. Following are some solutions to these challenges:

- **Remove barriers to access by offering transportation to and from the job site**—Nearly all sites, unless based in an urban center with access to ample public transportation, reported transportation to and from the work site as an ongoing challenge that kept some qualified students from participating in these opportunities.
- **Mitigate concerns about liability and youth labor laws**—Programs overcame legal barriers to work-based learning for students under 18 in a number of ways, including using their employer partners to help explain the relevant state and federal labor laws or extending school- or institution-based liability coverage for participants.

SUMMARY

The sites profiled in this report demonstrate a diversity of approaches that states and localities have used to create programs that both fit their needs and seek to address the persistent skills gap that leaves quality jobs with family-sustaining wages unfilled. The detailed profiles aim to provide state and local leaders with concrete examples and strategies to use when examining their own policies, infrastructure, and practices to consider how they can better connect secondary and postsecondary CTE students with apprenticeships. With the right partners, policies, programmatic elements, and support in place, aligned CTE-apprenticeship programs can both enrich CTE programs and increase the apprenticeship pipeline.



TECH READY APPRENTICES FOR CAREERS IN KENTUCKY – DR. SCHNEIDER AUTOMOTIVE SYSTEMS RUSSELL SPRINGS, KY



MANUFACTURING



INSTRUCTIONAL ALIGNMENT: FULL
PROGRAM ARTICULATION: FULL

BACKGROUND

Overview

Tech Ready Apprentices for Careers in Kentucky (TRACK) is a joint statewide initiative of the Kentucky departments of Education and Labor to establish a pipeline of secondary students into registered apprenticeship programs. Since 2013, employers and educators from local schools and area technical centers have partnered to create TRACK programs, which function as two-year pre-apprenticeships that fully articulate with registered apprenticeship. This summary focuses on one local TRACK program, Dr. Schneider Automotive Systems (Dr. Schneider) that is illustrative of how TRACK operates in the state.



Program Snapshot

- Participants (2015–16): 4
- High school graduation rate (2015–16): 100 percent

Dr. Schneider, a German-owned automotive parts manufacturer located in Russell Springs, Kentucky, has partnered with the Lake Cumberland Area Technology Center (Lake Cumberland) to offer a TRACK program in three pathways: industrial maintenance technician, injection mold setter, and mechatronics. Students participating in each two-year program earn 2,000 on-the-job training hours from Dr. Schneider and a minimum of 288 classroom hours of related technical instruction at Lake Cumberland. They also have the option of earning relevant industry-recognized credentials and a trip to Dr. Schneider's headquarters in Germany. Upon earning their high school diploma, students have the option to continue into a three-year, competency-based registered apprenticeship sponsored by Dr. Schneider, as well as the opportunity to continue their postsecondary education to earn an associate of applied science degree.

History

The introduction of the TRACK initiative closely aligns with Dr. Schneider's location in the area. The 90-year-old German plastic injection molding company, which also has production facilities in China, Spain, Poland, and elsewhere in the United States, opened its manufacturing facility in Russell Spring in August 2013. The first cohort of TRACK students at Dr. Schneider began their two-year pre-apprenticeship in the 2014–15 school year. High school students attend Lake Cumberland, one of 53 area technology centers operated by the Kentucky Department of Education, to receive their technical education instruction. On-the-job training is offered at the Dr. Schneider plant.

Dr. Schneider's interest in the TRACK program is both cultural and self-interested. Due to its German roots, where such apprentice programs are common, company leaders were familiar with the apprenticeship model and its value in training workers. The company also has experienced considerable growth, with the Russell Springs plant employing 180 employees at the start of 2016, and a planned expansion of an additional 200 employees by the end of the year. Consequently, TRACK is seen as an important component of the company's workforce recruitment strategy,



and plans are currently underway to recruit more experienced employees to become TRACK mentors.

In spring 2014, the state TRACK coordinator presented on the program at a regional economic development meeting. It was here that leaders from Dr. Schneider heard about and expressed interest in participating in the program; they were subsequently introduced to Lake Cumberland administrators by the TRACK coordinator, who facilitated initial program planning efforts. Partners relied heavily on guidance from the Kentucky Department of Education and the state Labor Cabinet to design a course sequence and pre-apprenticeship training program that satisfied both state CTE program requirements and apprenticeship needs. Agency staff also helped the partners navigate youth labor laws and design competency and performance-based models.

“Sometimes you’ve just got to think outside the box. We’ve not been in the box for a couple of years now. . . We’re doing more than your old conventional CTE programs. We’re trying to expand the curriculum so that it benefits these students.”

Jeff Adams, principal, Lake Cumberland Area Technology Center, Kentucky

PROGRAM STRUCTURE



The organization of the Dr. Schneider program closely parallels that of the TRACK program structure employed statewide. Employer sponsors, in collaboration with a partnering high school or an area technology center, choose a four-course CTE sequence (at a minimum) and identify at least one industry certification. This gives employers the flexibility to align classroom instruction to the needs of their workplace, while ensuring that the program meets the state’s CTE program quality standards and definition of a CTE program for federal *Perkins* reporting.⁴¹

TRACK also leverages the state’s competency-based education policy that allows K–12 credit to be measured based on performance, not instructional time.⁴² This means that the program at Dr. Schneider is largely competency-based. With assistance from the state apprenticeship office, leaders at Dr. Schneider created a defined list of competencies that students must master as they progress through the program. These competencies also form the basis of their CTE coursework in the manufacturing pathway.

The Dr. Schneider TRACK program offers students three career pathways: industrial maintenance technician, injection mold setter, and mechatronics. Dr. Schneider staff work with participating students to choose four courses from Lake Cumberland’s class schedule each semester that align to each student’s selected TRACK pathway. Freshmen and sophomores who are considering participating in TRACK are encouraged but not required to take introductory courses in the manufacturing pathway, which address cross-pathway foundational skills, such as blueprint reading and basic troubleshooting. This exposure helps to provide students with an understanding of the field, which can inform their decision to participate, as well as ensure that those who enter the program possess a common base of skills. Students apply during their sophomore year and officially enter the program at the beginning of their junior year.

During their junior and senior years, students split their days between Dr. Schneider and Lake Cumberland. They attend classes at Lake Cumberland in the morning and then work at Dr. Schneider from 10:30 a.m. to 4 p.m., four days a week. The fifth day is spent entirely at Lake Cumberland. During the summer months, students work full time at Dr. Schneider. This program structure has evolved over time. During the first project year, students were scheduled to attend school on Friday and work Monday through Thursday. However, the partners mutually agreed to shift this plan to better accommodate students’ learning needs and the school’s regular calendar. This change allowed more contact time between the teachers and students.

⁴¹ See http://education.ky.gov/CTE/cter/Documents/TRACK%20Agreement%20ATCs-Final_Form_distributed.pdf.

⁴² See [KRS 156.108](#) and [160.107](#) (House Bill 37, enacted 2012).



To ensure that students meet academic and technical course requirements for graduation, Lake Cumberland offers flexible and alternative schedules and delivery systems for instructional content. For example, students complete academic and technical requirements through a tailored blend of in-person and online coursework. Students also receive dual credit for coursework in the manufacturing pathway at Somerset Community and Technical College (Somerset). Upon completion of TRACK, the company sends those students who transition into the full apprenticeship program to visit its German headquarters and broaden their understanding of the company.

On-the-Job & Classroom Instruction

TRACK participants earn 2,000 hours of on-the-job training while working at Dr. Schneider. This amounts to roughly 20 hours per week during the school year and 40 hours per week during the summer. All participants are paid on a graduated wage scale, starting at \$8.50 an hour—30 cents higher than the state's minimum wage. By the third year of the apprenticeship, students accepted into the program make \$11 an hour.

Each student works under the supervision of a mentor, who is a journey-level worker at the company. A mentor must have the required technical expertise and a willingness and ability to teach, and agree to invest up to eight hours per day directing the work of their apprentice. Currently, the size of the TRACK program is limited to the number of available mentors, though the company hopes to train more mentors in order to take on more students.

Treated as a regular employee, each high school apprentice is given different assignments throughout the work day, with the difficulty progressing as students gain more experience and demonstrate mastery of competencies. Ultimately, students rotate through all tasks required on their chosen pathway's competency list. During work hours, students must complete paper-based daily logs of their experience and progress. Mentors sign off on the logs to affirm that students have demonstrated competency. They also assign quarterly progress grades for each student for the four CTE courses in which the student is enrolled at Lake Cumberland. Grades are submitted back to Lake Cumberland to be included on the student's transcript.

Curriculum & Assessment

Employer-developed competencies form the basis of the curriculum for both the school-based coursework and the workplace training offered for each of the three pathways. Each semester, Dr. Schneider mentors select the four most relevant CTE courses from the Lake Cumberland course catalog for each student based on their program progress. Course content is broadened by a blended learning platform used throughout the school district, which allows students to complete required academic courses at their own pace. Additionally, Lake Cumberland uses a manufacturing-specific online curriculum to help supplement students' technical learning. In addition, Dr. Schneider provides the students on-the-job access to industry-specific online content through Paulson Training Programs, Inc.

Students are assessed each semester on their progress toward mastery of the competencies defined for that term. Once students transition into the registered apprenticeship, they must pass a final assessment at the end of their third year, which grants them their journey-level certificate.

Program Funding

The Dr. Schneider TRACK program leverages existing educational funding to support program operation. At Lake Cumberland, support for program administration and instruction is provided through state and local funding. In addition, as an approved CTE program through the Kentucky Department of Education, the program is able to access federal Perkins funds. Dr. Schneider pays students wages and offers in-kind support by investing staff time in defining program competencies and mentoring students in the workplace.



KEY PARTNERS



By design, TRACK requires each partner to have a shared vision for the program and invest time and resources to deliver on their agreed-upon responsibilities. These basic roles and responsibilities are laid out in the state's work-based learning manual.⁴³

Employers

Leaders at Dr. Schneider have dedicated significant time and resources to the development of the local TRACK program. This includes creating a new employee policies handbook for TRACK participants to adequately address issues that include youth labor laws; training current employees to be mentors; and creating strong support for the program across the company, including from its human resources department.

“Apprenticeship is not a burden, it is an investment for our future. That’s what I always say. You can’t measure it, but it’s clear that it’s very successful.”

Torsten Langguth, plant manager, Dr. Schneider Automotive Systems, Inc.

Leaders at Dr. Schneider said that, as a company, they are not seeking an immediate return on investment. The company recognizes the contribution that TRACK can make in worker recruitment, and as such, expects program benefits to increase over time as the apprentices progress through their training and become full employees.

Postsecondary Institutions

Somerset is the postsecondary partner for the Dr. Schneider program. The college offers dual credit options for pre-apprentices according to the chosen apprenticeship pathway. Once accepted into the full registered apprenticeship, students are eligible to earn their associate of applied science degree at Somerset, which is paid for by Dr. Schneider.

STUDENT RECRUITMENT AND SUPPORTS



Entrance Requirements

Recruitment for TRACK begins during the spring of students’ sophomore year, with marketing taking place through school announcements, flyers, and class presentations. Dr. Schneider and Lake Cumberland share the recruitment responsibilities. Lake Cumberland helps recruit interested students to attend an information session explaining the details of the program, and Dr. Schneider arranges for them to tour the facility to learn more about the three apprenticeship pathways. In mid-April, students complete an application developed by Dr. Schneider. Completed applications, along with student transcripts, are provided to Dr. Schneider’s human resources department for evaluation. Top candidates are brought in for a competitive interview. Selection for the program hinges on student performance, with Dr. Schneider staff having the ultimate say on who is accepted.

“[TRACK] has helped drive such a change in our high school and our whole philosophy—away from this college-for-all mentality to now, the new rock stars on our campus, are the kids doing CTE.”

Allan Reed, superintendent, Adair County Schools

After being hired as pre-apprentices, the school principal, CTE instructors, and guidance counselors assist students with rearranging their schedules and completing all of the necessary paperwork. The Dr. Schneider human resources department and mentors pick the fall semester manufacturing courses for each student, which is based on the apprenticeship pathway that they enter.

⁴³ See <http://education.ky.gov/cte/cter/pages/wbl.aspx>.



PROGRAM BENEFITS

High school students who complete their two-year pre-apprenticeship program earn their high school diploma, as well as 2,000 on-the-job hours and 288 classroom hours, which are awarded as advance credit toward Dr. Schneider's three-year registered apprenticeship.



Students accepted into Dr. Schneider's registered apprenticeship program complete a total of 4,000 hours of work experience and a minimum of 576 hours of classroom instruction by the end of their apprenticeship training. They also earn a Somerset certificate and their journey-level certificate. Though not a requirement of the statewide TRACK initiative, the registered apprenticeship at Dr. Schneider includes a company-sponsored associate of applied science degree at Somerset that is specific to the pathway the student chose.

STATE SUPPORT

TRACK began as an interagency venture of the Kentucky Department of Education's Office of Career and Technical Education and the Kentucky Labor Cabinet. Since TRACK was intentionally designed to be embedded into the state's existing CTE and apprenticeship infrastructures, the program's creation has placed no additional cost on the state. In addition to Dr. Schneider, the state TRACK program has agreements with the manufacturing industry and is currently piloting programs in the carpentry and electrical fields. Across the state, more than 200 students participated in TRACK programs in the 2015-16 school year. Additional TRACK programs are being developed with employers in health sciences, welding, and information technology.



Administrative

The two state agencies have devoted considerable staff time and resources to develop the TRACK program. Serving as intermediaries, state staff provide support for local employers and K-12 institutions interested in participating. They broker relationships, facilitate meetings, and act as interpreters for employers and educators. TRACK works with local economic development and workforce systems to identify and recruit prospective employer partners. The state CTE office has developed a suite of resources, which they use to help employers and educational partners navigate the most efficient path to establishing such programs. The Labor Cabinet has developed sample task lists to help employers translate their workplace requirements into measurable competencies, and also works with employers to register their apprenticeships with the state, which is a requirement to participate in TRACK.

"For the employer, though, it's about making sure textbook meets real world. That's where TRACK makes the difference, because what they're learning in the classroom ensures that they understand how to use it on the production floor or in a real world concept. That's the value of TRACK."

Melissa Aguilar, executive director of the Kentucky Workforce Innovation Board

TRACK, which serves as a student's CTE program, was designed to fit seamlessly into the state's K-12 accountability system that awards points to school districts based on whether a student meets requirements to be college-ready, career-ready, or college- and career-ready. Since the TRACK program also counts as a student's CTE program, school districts, in turn, are incentivized within the state's accountability system to encourage CTE concentration and completion. As time goes on, the state will have the ability to track progress and outcomes because TRACK has been embedded in the state's K-12 accountability and registered apprenticeship systems, thus allowing staff to evaluate the impact and adjust the program as needed.

The state has also leveraged its existing relationship with Adecco, a national staffing agency, to address employer concerns about insurance and liability, issues for employees under 18. Under the state's Youth Employment Solutions (YES) program, Adecco manages the administrative and legal elements of work-based learning, including TRACK.



According to the state, the YES program has helped remove barriers for some employers, and as a result, they have agreed to participate in TRACK. Adecco also helps recruit employers and prepare students with the professional skills they will need to be successful in the workplace.⁴⁴ However, Dr. Schneider did not choose to use the YES program, as all TRACK students are hired directly through the company's human resources department.

Financial

Kentucky uses its *Perkins* reserve fund to implement new pathways aligned to high-need industries. Though not exclusively set aside for the TRACK initiative, emerging TRACK programs are eligible for these implementation funds because they are recognized by the Kentucky Department of Education as CTE career pathway.

OUTCOMES

Regarding the Dr. Schneider program, four students (two seniors and two juniors) participated in the 2015–16 school year, the program's second operational year. In May 2016, the two seniors transitioned into Dr. Schneider's full apprenticeship upon graduation, and the two juniors continued their participation in the following school year.



Across the state, more than 200 students participated in TRACK programs in the 2015–16 school year. However, outcomes are not available for those students in programs that are in the state's pilot phase, such as the carpentry and electrical TRACKs. The manufacturing TRACK is the only program with available outcomes at this time. In 2014–15, the statewide TRACK program had 14 participants in its manufacturing program. It had a 100 percent high school graduation rate, and a placement rate of 25 percent in apprenticeships, 38 percent in postsecondary education, and 37 percent in the workforce or military.

LESSONS LEARNED

Program staff and partners identified some lessons learned, which include the following:



- Collaborate across state agencies to leverage resources, create capacity, and most importantly, create opportunities for innovation.
- Embed the program into existing state infrastructures. This helps to create efficiencies, reduce duplication of effort, and target resources to accelerate replication of programs.
- Create a common statewide model that also allows employers to have flexibility, which helps create a win-win for employers, the state, and students.
- Provide opportunities for students to learn beyond the traditional school day and setting, which allows for increased learning time.
- Collaborate across education and employment systems to build to a common set of competencies that enables student learning and future success.

⁴⁴ Advance CTE (2016). "Removing Legal Barriers around Work-based Learning." https://careertech.org/sites/default/files/WBL_casestudy_Legal_2016.pdf



TRACK Pursuit

- ❑ Statewide Youth Apprenticeship program in partnership with the Kentucky Labor Cabinet for Registered Apprenticeship
- ❑ Utilizes the current secondary Career and Technical Education infrastructure at no cost
- ❑ Creates a seamless Career Pathway for students into post-secondary Registered Apprenticeship opportunities
- ❑ Creates a pipeline of students with a good foundation and an interest in the occupation



TRACK Practice

- Employer registers apprenticeship program with KY Labor Cabinet
- Employer works with school to identify students and selection process
- Employer chooses a minimum of a 4 courses sequence
- Employer determines if student completes successfully
- On-the-job hours are credited through co-op
- Post-secondary requirements determined by employer



3

Laying TRACKs

- Employer-Based Apprenticeship
 - a. Manufacturing
 - b. Electrical
 - c. Carpentry
 - d. Early Childhood Education
 - e. Automotive Tech (coming fall 2017!)
 - f. Diesel Tech (coming fall 2017!)



4

TRACK Results

- ✓ Apprenticeship being recognized as a valuable post-secondary option for students
- ✓ Career pathway leads to the gainful employment
 - ✓ Re-enforces employability skills
- ✓ Creating a competitive recruiting environment
 - ✓ On-the-job hours are credited to student towards apprenticeship hours
- ✓ Dual/Articulated credit is being accepted for post-secondary related technical instruction
- ✓ Employers are registering apprenticeship programs just to participate in TRACK



Winning Trifecta!

Employer Benefits	Student Benefits	District Benefits
Employer tailors training.	Students are paid for on-the-job training.	District is preparing students for local/global workforce.
Employer selects students.	Minimal student debt, if at all.	The district promotes positive partnerships with local community and business leaders.
Employer selects courses.	Students, upon completion, receive a nationally recognized portable credential.	The district helps create and retain local jobs for students.
Employer cultivates loyal employees.	Student benefits from hands-on learning.	Industry certification counts toward college and career ready accountability.



TRACK Race... Going the Distance!

If an employer invests in Registered Apprenticeship, CTE will build a secondary pipeline utilizing the TRACK model.



7

TRACK Condition



Partnership with Adecco

Mitigates the employer's risk by student being on Adecco's payroll and being covered by Adecco's worker's compensation policy.



8

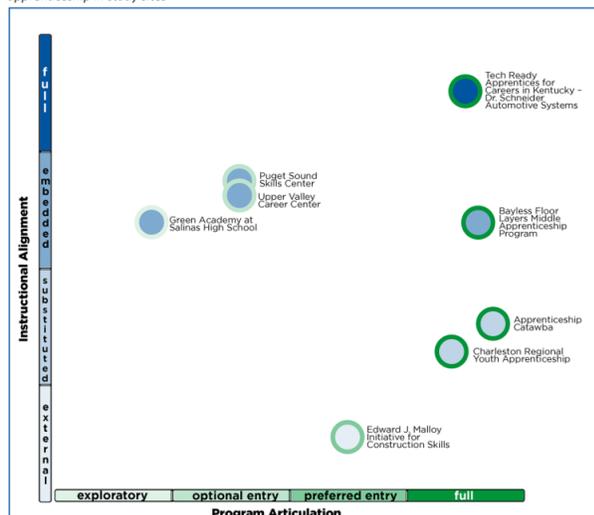
TRACK Feat

KEES funding can be utilized for Registered Apprenticeship starting in the 2018-2019 school year!



TRACK Wins!

Figure 1: Degree of instructional alignment and programmatic articulation between CTE and apprenticeship in study sites



TRACK Report

Atlas Machine & Supply, Inc.

Rich Gimmel
and
Robert Williams



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What is TRACK?

TRACK is a partnership between the Office of Career and Technical Education and the Kentucky Labor Cabinet that provides pre-apprenticeship opportunities to high school students through existing programs offered at secondary tech centers across the state.

The employer chooses from the course offerings at the school to design their program. A minimum of 4 courses are required, with one of the courses being a cooperative education placement.

Upon successful completion, the student will be awarded an industry certification by the employer through the Kentucky Labor Cabinet. All on-the-job hours worked will count toward the Registered Apprenticeship resulting in a head-start on postsecondary training and career opportunities.



Fast TRACK Facts:*

- Up to 78 million Baby Boomers will be retiring from the U.S. workforce.
- Only 40 million from the "X" and "Y" generations will be available to replace them.
- Workplace will require advanced technical skills through high tech developments.
- Current workforce skills need updating to keep up with changing demands.
- Future workforce needs to be prepared for upcoming trends.
- By 2018, 90% of fastest growing jobs will require training beyond high school.
- By 2018, 31% of small business owners and 41% of manufacturers will be unable to fill jobs.
- Due to on-shoring, China and US will be equal in wages by 2018.

*Source: IWNC.org

Industry Workforce Needs Council

For more information:
www.kentuckyapprenticeship.com
Email: KDETRACK@education.ky.gov

TRACK



Tech Ready Apprentices for Careers in Kentucky

An initiative between the Kentucky Department of Education's Office of Career and Technical Education and the Kentucky Labor Cabinet.



KCTCS' Role in Apprenticeships

KCTCS has an opportunity to engage in an innovative model for registered apprenticeship training in Kentucky through a program coordinated by the KY Labor Cabinet. With companies competing for the same limited pool of qualified candidates, it is more important than ever to create pathways for experiential learning that is industry validated and credential oriented. The KY Labor Cabinet's apprenticeship model is one effective, proven way to accomplish this goal. Additionally, apprenticeship training supports the newly adopted KY Performance Funding Metrics for higher education.

1. KCTCS will support apprenticeships through programs that:

- a) Include frontloaded classroom training.
- b) Include concurrent classroom and on-the-job training.
- c) Are designed for incumbent workers.
- d) Include flexible non-credit options.
- e) Incorporate on-the-job training.
- f) Include remote training for both non-credit and credit opportunities.
- g) Include strategic and targeted partnerships.

2. Funding may be available and can be used to:

- a) Offset the costs of training for up to a designated number of contact hours.
- b) Provide equipment to support training needs.

3. Examples of apprenticeship programs that may be further enhanced and/or replicated:

- a) UPS collaboration with Jefferson Community and Technical College that includes housing, scholarships, and a guaranteed skill set for technician training.
- b) Mubea collaboration with Gateway Community and Technical College, a small company with an apprenticeship program that leads to an AAS degree. The program also includes on the job training five days a week and classroom training on Friday and Saturday.

4. Opportunities for growth:

- a) Mercedes-Benz technical training apprenticeship (there are currently no KY technician training centers) for Mercedes Drive that includes 16 weeks classroom training followed by on-the-job training. Similar programs exist in CA, ME, FL, and TX.
- b) AppleCare training that offers a career pathway opportunity in IT.
- c) Convention center construction (Louisville and Lexington) for construction trades apprenticeships.

5. Areas of focus:

- a) Identify short term, industry recognized programs in the following sectors:
 - Advanced Manufacturing
 - Information Technology
 - Health Care

- Construction/Trades
- b) Utilize industry partners to determine specific needs that may involve new programs and/or courses.
 - c) Identify locations that can support industry needs, requirements, and/or training.

6. Next steps:

- a) Construct and MOU/MOA between Labor Cabinet and KCTCS that commits to support the apprenticeship program through enhanced course/program development; flexible scheduling; alternative delivery methods; appropriate facilities; qualified instructors.
- b) Communicate the agreement and begin planning for apprenticeship pathways with targeted industries.



Healthcare

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Brittany Burke & Christian Ralston



INTEGRATING WORKFORCE INVESTMENTS WITH BUSINESS IMPACT:

HOW NORTON HEALTHCARE IS MAKING THE CASE FOR ADVANCING ITS FRONTLINE WORKERS' SKILLS AND CAREERS

By Dr. Randall Wilson

Norton Healthcare of Louisville, KY, the region's leading healthcare provider, has been nationally recognized as a standard for delivering and measuring quality care. Driving this leadership is deep investment in the growth and development of their staff—a "culture of continual, lifelong learning"—and commitment to the Metro Louisville's "cradle-to-career" education strategy. Investing over \$11 million a year in staff education and development, their transformational approach to workforce development integrates their strategic priorities with programs based on assessment and forecasts of staffing needs, data analysis, internal and external partnerships, and quantifiable measures of the impact their investments have on their business.

This combined approach to quality care, workforce development, and analytic capacity is no accident: the three are closely related and

Norton stands as a model of sustainable learning and career growth for a healthcare employer's frontline workforce.

mutually supportive. While not unique in this approach, Norton's integration of it represents an organizational best practice and stands as a model of sustainable learning and career growth for a healthcare employer's frontline workforce.

The Norton Healthcare case study is the first in CareerSTAT's business practice series on how healthcare employers measure the impact of their investments on frontline workers. This study documents Norton Healthcare's approach to workforce programs and measurement with a focus on how analysis of their workforce needs influenced decision making and investment goals, and consequently deepened its reliance on data to inform planning and program development.

Presented here to inform healthcare employers, workforce practitioners and others interested in starting, scaling and sustaining frontline workforce programs of their own, **the study explores the ways leading healthcare organizations around the country use frontline investments to improve six key business metrics:**

- > Workforce Availability
- > Employee Competency and Advancement
- > Employee Engagement
- > Patient Experience
- > Community Impact and Quality
- > Safety

As a Frontline Healthcare Worker Champion recognized for sustained investment in advancing the skills and careers of entry-level workers, Norton appears in the CareerSTAT *Guide to Investing in Frontline Healthcare Workers* for demonstrating programmatic and organizational best practices.



NORTON HEALTHCARE'S STRATEGIC PRIORITIES

Deliver Highest Quality Care

An integrated approach to investing in frontline staff and measuring its impact on business begins with a statement of purpose—a goal. Norton Healthcare's ultimate goal is founded on its mission "to provide quality healthcare to all those we serve, in a manner that responds to the needs of our communities and honors our faith heritage." Reinforcing that mission is the determination to make Norton Healthcare the "preferred place to be" for patients, family members, and healthcare professionals that reflects the diversity of Louisville's population.

President and CEO Russell F. Cox stresses the importance of all staff, including frontline employees, knowing their roles in achieving the organization's goals. If Norton is to be the safest place for healthcare, for example, all workers—from environmental services to physicians—must understand and fulfill their specific role in providing exceptional care. Optimizing a worker's commitment depends on access to the results of his or her efforts, which requires leadership to share the data and methods used to measure it (like patient satisfaction surveys and employee engagement surveys, for example).

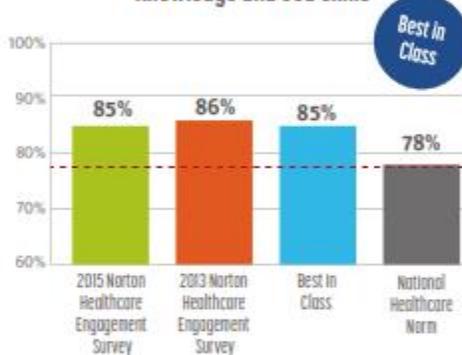
Norton Healthcare is an integrated, faith-based system providing care at more than 250 locations throughout Greater Louisville and Southern Indiana. The Louisville-based not-for-profit system includes five Louisville hospitals with 1,837 licensed beds, seven outpatient centers, 13 Norton Immediate Care Centers, more than 14,000 employees, more than 600 physicians and approximately 2,000 providers in Norton Medical Group on its medical staff. Nearly half (44 percent) of Norton's employees are frontline workers like nursing assistants, transporters, medical billers and coders, and dietary and environmental service staff.



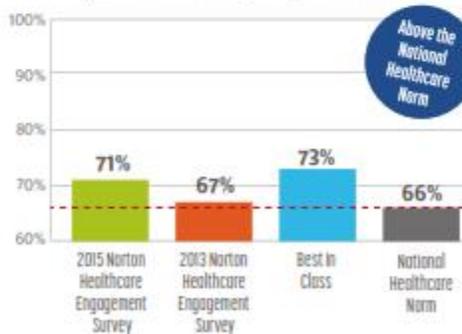
Frontline workers shape our reputation and deliver our mission. Preparing them for success is critical to the organization's success.

—Russell F. Cox
President and CEO

Opportunity to Improve My Professional Knowledge and Job Skills



My Leader Encourages My Career Growth



RATES FROM EMPLOYEE ENGAGEMENT SURVEYS SHOW THAT FRONTLINE EMPLOYEES AT NORTON HEALTHCARE FEEL MORE SUPPORTED AND ENCOURAGED TO GROW THAN COMPETITORS.

Create a Culture of Learning

Norton Healthcare's mission and strategy thus depend on a culture of continuous learning and opportunity. Former CEO Stephen Williams knows the power of this culture firsthand: "My commitment to advancement in the workplace is personal. I began working in healthcare as an orderly while in high school, joining Norton Healthcare 37 years ago. Our employees are by far our biggest asset. I want our valued employees to have the same opportunity and support I did in growing their Norton Healthcare career."¹

This culture of learning and development is expressed to staff during hiring, onboarding, and throughout their employment. Norton works to make employment there "sticky" by encouraging staff loyalty and enthusiasm, and they do it with workforce development programs, career advancement opportunities, personal support, competitive compensation, and benefits. As System Vice President of Mission and Outreach Ronald C. Oliver, Ph.D., BCC, puts it, "We tell employees that we hope that this is your career home. From GED to PhD, we have the resources to help you."

For President Cox, what differentiates Norton's approach to workforce investment is that "we look at it as a strategy," rather than viewing it narrowly as a set of programs or initiatives. Dana Cook-Pearson,

“We know that the people we invest in become loyal, dedicated, long-term employees.”

—Tony Bohn

Chief Human Resource Officer

a frontline manager in Health Information Management, echoes this view. After participating in a successful effort to upgrade her group's skills and help them pass a required certification exam, she is pursuing a bachelor's degree for herself: at Norton, says Cook-Pearson, "learning is contagious."

Norton's commitment goes past the careers of their employees and extends to the wellbeing of their families. For example, Norton's Caring Tree Program assisted 330 employees by providing for their families at Christmas, including a total of 829 children. Approximately 600 Norton Healthcare leaders donated time and funds to plan, purchase, and deliver gifts, food, and clothing.

In addition, Norton's Employee Emergency Relief Fund provides financial assistance for unforeseen expenses to cover medical bills, property damages, additional child and dependent care costs, or other

events on a case-by-case basis. Overall, the goal is to provide employees with wraparound services that support both professional and personal needs.



1. Randall Wilson and Kelly Aiken, *Guide to Investing in Frontline Healthcare Workers* (Washington, DC: National Fund for Workforce Solutions: Jobs for the Future: Boston, MA, 2016), 13.

NORTON HEALTHCARE'S WORKFORCE PROGRAMS

Norton Healthcare has an extensive and wide-ranging portfolio of programs for investing in employee education and advancement. While other leading healthcare employers have made similar investments, Norton's approach is both strategic and comprehensive.² Over time, the learning strategy as well as the scope and scale of workforce investment have evolved in response to changing organizational priorities and to data analysis that clarified the workforce needs.

Today's workforce and educational strategies trace their origins to 2000, when Norton first instituted a workforce development function to improve employee engagement and fill entry- and mid-level positions. Perhaps more pressing was a directive from Norton's board to reduce the \$1 million-per-month cost of "travelers"—temporary nurses hired to fill vacancies in those positions. At the time, the focus of employee financial aid programs was on building a nursing pipeline—the nascence of what would become a "Norton Healthcare Scholar."

Then, in 2009, leadership in Human Resources began the process of realigning their workforce development strategy from a "transactional" function to one that was "transformative." For Tony Bohn, Chief Human Resources Officer, this meant "knocking down the silos" between workforce development and talent acquisition—aligning workforce investments with the organization's need to attract, develop, and retain talent in the hospitals and primary-care practices. It required new infrastructure to better select and track their workforce investments, which meant going beyond processing requests for tuition assistance, to utilizing the scholarship program to help employees attain the degrees and credentials needed to fill critical vacancies and grow a robust talent pipeline.

Norton Healthcare's comprehensive approach to career development relies on the work of the Office of Workforce Development, Norton University, and the Institute for Nursing.

Norton Healthcare Career Development Model



2. For examples, see Wilson and Aiken, *Guide to Investing in Frontline Healthcare Workers*.

1. Office of Workforce Development (est. 2000)

To guide frontline worker advancement and build a pipeline of professionals, Norton's Office of Workforce Development set up a *career center* and a staff of six coaches to assess workers' skills and interests, and to provide career advice and financial assistance. Led by Director Christy Ralston, the coaches speak with employees about their career goals and explain alternative paths and potential barriers and ways to remove them. Those seeking tuition assistance are required to discuss their plans first with career coaches.

The *Norton Healthcare Scholar Program* invests \$5 million annually to support acquisition of credentials by current and future Norton employees. Candidates are eligible for up to \$24,000 per degree or certification. At any given time, 750 current or future employees benefit from tuition payments made in advance of their coursework, thus avoiding out-of-pocket expenses. Since the program's inception, over 6,000 students—three-fourths of them frontline employees—have received educational support, and 1,350 working students are coached annually.

The Office of Workforce Development collaborates with *Norton's Talent Acquisition* staff, business centers within its facilities, and regional educational

providers to develop new education and training programs in specific occupational areas, such as medical lab technologist and acute care patient care assistant. It recently recruited an *Academic Workforce Liaison* to help align and bridge high school curriculum and pathways to healthcare-related college degrees. In addition, Workforce Development partners with higher education providers, Louisville's schools, and local government to attract young people to health careers, and participates actively in the Mayor's *SummerWorks* program.

2. Norton University (est. 2006)

Under the leadership of Al Cornish, Norton's Chief Learning Officer, Norton University programs aim to give every employee the skills needed to do their work effectively. Its *in-house educational programming* ranges from training in medical interpretation to continuing medical education for physicians.

Frontline workers who need preparation for further study can participate in *School at Work*®, a blended learning, basic skills program that combines online learning with onsite instruction. They can also participate in *Elevating the Front Line Employee*, a program designed to remove barriers to success and career advancement for entry-level workers—including help with financial planning and work readiness.

Elevating Frontline Employees Curriculum



Courses in leadership development (like *So You Want to Be a Leader?*) give frontline supervisors the opportunity to shadow an experienced leader. A similar program customized for Norton Medical Group enhances the leadership skills of over 600 primary-practice managers, supervisors, coordinators, and team leaders. In all, Norton University offers both instructor-led and self-paced online training as well as online examinations. Over 37,000 continuing education credits were offered in 2015.

3. Institute for Nursing (est. 2010)

A National League of Nursing Center of Excellence, the Institute of Nursing at Norton Healthcare provides continuing education and career advancement for 4,500 nursing professionals at

all levels of the system. For example, its *Academic Practice Partnership* collaborates with the University of Kentucky to promote those with bachelor of science degrees in nursing (BSN) to doctorates in nursing practice. The partnership—originally formed to serve Norton Healthcare’s strategic need for advanced practice nurses in both acute and primary care and across the continuum of services—was also designed to retain the BSN-prepared nurses who were turning over after three to five years in the organization. The Institute also works in collaboration with the Office of Workforce Development to support associate degree nurses in obtaining their bachelor degree. More broadly, the Institute works with hospitals throughout the region to promote clinical education and professional development.

Building the Region’s Healthcare Workforce

Norton Healthcare’s internal workforce achievements have inspired initiatives to align education and training with healthcare needs at the regional level. It was instrumental in launching the Health Careers Collaborative of Greater Louisville, a regional industry partnership. Alongside nine other healthcare employers in the region, Norton helped formed the collaborative with education and community partners to support recruitment of a healthcare workforce and the development of pathways. The Collaborative advises on common educational projects, such as the creation of stackable credentials and new health professional programs, including Medical Laboratory Technology and Acute Care Nursing Assistant. Created by Collaborative partners, the Kentucky Health Career Center (KHCC) draws on best practices of Norton’s own career center and is one of two sector-focused career centers funded by the area’s public workforce system, KentuckianaWorks. KHCC offers resources and services for people seeking jobs and wanting to advance in healthcare, and for companies looking to hire or retain skilled employees. Norton worked with other healthcare organizations to advise on the selection of a center operator, programming, and performance metrics. The Center’s “Career Calculator” is a web-based application that culls employment statistics and job-posting data to inform users about potential career pathways and validates the importance of workforce analytics to KHCC endeavors.³



3. Sri Ravipati, "Online Calculator Helps Louisville Students Choose Career Paths," *THE Journal*, December 10, 2010, thejournal.com/articles/2010/12/10/online-calculator-helps-louisville-students-choose-career-paths.aspx.

BUILDING NORTON'S CAPACITY FOR FORECASTING AND IMPACT ANALYSIS

A chief obstacle in transforming Norton Healthcare's workforce programs from a collection of programs into an integrated strategy was a lack of data on their investments' impact on strategic priorities. While workforce programming in its first decade (2000-2010) was substantial, it was not evidence-based. Data on student aid requests was collected but not analyzed with an eye to strategy or future workforce needs. Neither were there measures nor criteria to guide that analysis. As Bohn observes, "what's measured gets improved." To remedy this, Human Resources and Talent Acquisition leadership set out to improve their analytic capacity.

“The beauty of Norton Healthcare is where you start in the organization is just that—your starting point. You decide where you want to end up.”

—Russell F. Cox
President and CEO

Two major priorities drove Norton to invest in data analytics:

1. The need to evaluate Norton Healthcare Scholar programs and clarify per program costs and outcomes in order to redesign and better target tuition aid; and
2. The need for a streamlined, employee-friendly data system to better expedite tuition aid reimbursements, access transcripts, and enable employees to manage their account.

To accomplish this, they would hire an analyst and design a tool to make smarter, more strategic workforce investments to guide workforce development decisions less by hindsight (How many students did we assist?) and more in real time (What are our workforce needs now, what will they be, and how should we invest in meeting them?).

Jackie Beard, System Director for Talent Acquisition and Workforce Development, hired Nick Nethery as Norton's first Talent Acquisition and Workforce Development Analyst. Together, Beard and Nethery designed a tool that would use an employee database to answer important workforce planning questions.



2017 EFLE GRADUATES

They distilled more than 1,300 job titles into “job families”—groups of jobs that involved similar types of work and required similar training, skills, knowledge, and expertise.⁴ They then devised the metrics to analyze data by employee head count, age ranges, potential retirements, vacancy rates, turnover, time-to-fill positions, and employee engagement.

The tool was designed to allow “drill downs” into particular occupations or job families, such as critical care nursing or medical lab technologies, to generate reports to inform managers’ decision making. There are plans for the tool to analyze additional data like workers’ educational attainment, the skills required for different job families, and patient satisfaction scores.

The tool and the analytics function have grown through trial and error and have expanded to monitor staffing levels, vacancies, and turnover. Quarterly reports now predict retirements and other staffing metrics by job family. The analytics team works with leaders in Norton’s Talent Acquisition and Workforce Development business units to inform program decisions. While analysis can be complicated and fine-grained, concise reports that summarize

“Our analytics easily make the case for investment. There is clear correlation between our commitment and our employee’s loyalty, but financial ROI is only one benefit. The real return is in employee engagement, self-fulfillment, and self-actualization of the people working with patients and families.”

—**Russell F. Cox**
President and CEO



high-level findings have opened executive leaders’ eyes to the potential of data to improve proactive analytics and real-time decision-making.

To meet growing data demands from managers and leaders, Norton recently centralized its data analytics function by creating a Workforce Analytics Department with three Senior Workforce Analysts, two Workforce Analysts, and a Workforce Analytics Coordinator. This allows Workforce Analytics to work with internal customer across silos to develop and support systems, applications, and reports to measure impact and trend key people data to support the organization’s business strategies.

An example of a key interactive, internally built, web-based application, supported by Workforce Analytics is the Career Center Management Tool. Career coaches can input assessments and other data on individual employees to help track career development and process requests for tuition assistance from the Norton Healthcare Scholars program. The tool also features a dashboard with individual student data and enables the Center to manage things like career-coaching requests and visits. By design, Workforce Analytics uses student data, tuition expenses, and degree efforts for analytical reporting, trending, and forecasting.

4. “Compensation: Job Families,” Massachusetts Institute of Technology, hrweb.mit.edu/compensation/job-evaluations/job-families.

IMPLEMENTING PROGRAMS AND COMMUNICATING IMPACT

Since the advent of the Workforce Analytics effort in 2011, Norton Healthcare has become increasingly intentional in its use of both quantitative and qualitative data to inform workforce decision making, and communicate organizational and individual outcomes. Analytical findings help assess the impact of current investments—like coaching and the Norton Healthcare Scholars program—and to identify any needs for new programs or modifications to existing ones. Qualitative data and individual stories demonstrate how these programs change lives and create more engaged employees. Below are specific examples that illustrate the impact of Norton's "grow your own" approach to workforce development, and the wedding of analysis and strategic priorities.

Norton Healthcare Scholars and Tuition Assistance

Since its inception, over 6,100 Norton employees have benefited from the Norton Healthcare Scholars

program. Data bear out the program's contribution to a robust talent pipeline and improvements in staff retention. Over a five-year period, the average retention of incumbent employees who received tuition assistance toward nursing degrees increased at a much higher rate (88 percent) than new, nonscholar nursing graduates (73 percent) and experienced nurses (61 percent). Data showed that nearly 9 in 10 (86 percent) of frontline employee 2014-15 Norton Scholars who earned credentials earned promotions, and 99 percent of those receiving upfront tuition payments completed the semester's work.

Analytics clarified the limits of the tuition assistance model. Data on loan defaults and on students matriculating in disciplines not in demand at Norton Healthcare led to program changes including certified coaching and career path discussions before providing financial assistance to students. Further, analysis made the case for broadening the goals

Average Retention Rate over a Five-year Period

88%

future and current employees who received tuition assistance toward nursing degrees

73%

new, nonscholar nursing graduates

61%

experienced nurses

86%

frontline employee 2014-15 Norton Scholars who earned credentials earned promotions

99%

Norton Scholars receiving upfront tuition payments completed the semester's work

While SAILE DAVIS always knew that she wanted to become a Registered Nurse, she couldn't have anticipated the path she took to achieve her goal. Davis started as a traditional student enrolled in a nursing program, but when her student visa expired she had to put her education on hold for 10 years. During this time, she focused on work and started as a Patient Care Associate



at Norton Healthcare. She loved the clinical environment and the ability to work directly with patients, but she wanted to take on more responsibility and found a way to work and pursue her dream. Utilizing Norton's career pathways and extensive education supports, Davis returned to her goal of becoming an RN. Using Norton Scholars program, Davis started as a nurse extern and is now working as a nurse apprentice. The program helps her balance her full-time nursing classes with the work experience to prepare her to succeed on the job. With her goal in sight, Davis is focusing on giving back and looking forward. Now a resident and citizen, Davis leads the Bellarmine Student Nurse Association, mentors other nursing students, and is planning for a master's degree to specialize in neonatal care. Davis has graduated in May 2017 and is starting her career as a BSN, RN with Norton Healthcare.

of tuition aid and other workforce programs: Once concentrated in nursing, recent programs foster credential attainment and programming along a range of important occupations including allied health and information technology fields.

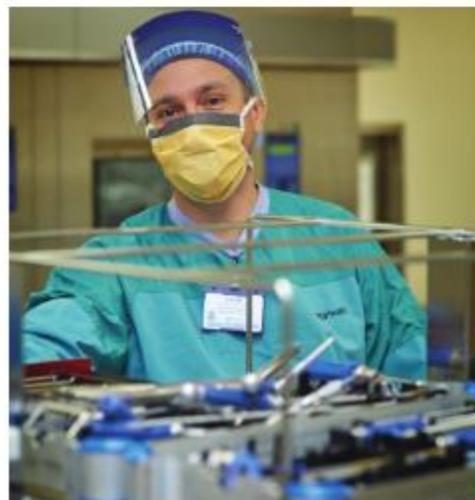
Elevating Frontline Employees

Norton Healthcare's workforce investments touch employees and community residents in many ways.

Data showed that 69 percent of the first cohort in 2014's six-month Elevating Frontline Employees program earned promotion and higher wages. In less tangible ways, employees who participate in the program express appreciation for the strong support provided by fellow employees and career coaches as they chart their path to new opportunities at Norton.

Laboratory Technologists

Norton's lab operations didn't know the severity of a looming workforce problem until the analytics team, using Norton's forecasting tool, uncovered pending retirement by a wave of their laboratory technologists. Fine-grained analysis of staff age levels revealed that up to 40 percent of laboratory staff could retire over the next five years and that most technicians, a high percentage of them more than 60 years old, could age out within 10 years. (Many had deferred retirement during the recession.) These findings led senior leadership, clinical and pathology laboratory managers, workforce, and talent acquisition leaders to develop career ladders for associate-level medical lab technicians to advance and populate a talent pipeline in the field. To support internal growth and recruitment of bachelor's degree-holding technicians, laboratory and workforce staff convened employers and educators in the region's newly formed workforce partnership, Health Careers Collaborative of Greater Louisville,





to standardize titles and professional requirements, and expand capacity for degree programs and clinical experience. Norton also developed a training program of its own to offer other lab certifications. This anticipated shortage led to the development of an overall strategy that lessened the severity of the problem and equipped Norton to manage similar situations in the future.

Diagnostic Imaging

As a result of local schools producing more radiology technician graduates than the employment market demanded, Norton's Diagnostic Imaging Department had limited full-time job vacancies. Analytics' review of workforce data revealed a higher volume of per diem staff and increased first-year turnover in new graduate technicians. The saturated market was forcing some new graduate technicians (including several Norton Scholars radiology students) to consider per diem positions, with varying hours and lacking benefits, while seeking out other full-time employment opportunities. With this information, the analytics team worked with Imaging leadership to select key, high-need occupations, including radiological and CAT scan technicians, to support conversion of per diem positions to full-time permanent. The improved strategy realigned the staffing mix with budget-neutral costs to the business unit and reduced first-year turnover in technicians.

Health Information Management (HIM)

Systems managers in HIM needed to upgrade the skills for certain occupations to implement

ANDRE MARTIN, an environmental associate at Norton Children's Hospital who was eager to grow his career, sought employment at Norton because of its reputation as "an organization that offers you options." Working with a career coach in the Office of Workforce Development, Martin participated in the six-month Elevating Frontline



Employees program where he was encouraged to reflect on his goals, develop a résumé, learn more about budgeting and personal finance, and practice good health habits. Shortly after finishing the program, Martin was promoted to Patient Care Associate and found that it was not a good fit. He worked with his leader and career coach to explore other roles in the organization where he applied and internally transferred to a patient transport role within the same hospital. As Martin develops his career plan, he feels strongly that, "If you lack education to qualify for a job, Norton will work with you to get what you need."

transition to the use of electronic health records (EHRs). To work effectively and help physicians adapt to EHRs, incumbent medical transcriptionists (whose work would be phased out by the transition) needed training to become Registered Health Information Technicians with knowledge of data use, medical terminology, and experience with the new technology. To meet this priority, HIM managers worked with the Office of Workforce Development to identify an educational provider and develop an on-the-job certification program with tuition discounts, credit for prior learning, and onsite clinicals. All 11 students who enrolled in the program, including System Manager Dana Cook-Pearson, graduated with academic honors and retained their jobs.

NORTON HEALTHCARE'S BEST PRACTICES

As this case demonstrates, Norton's integrated approach to workforce development, data analytics and quality care did not emerge overnight. Its 16-year evolution reflects experimentation and adaptation to changing conditions and needs, as well as their historic commitment to their staff and the surrounding community. As a model of sustainable learning and career growth, particularly for frontline workers, Norton offers lessons learned and best practices for interested healthcare providers.

Align with Organizational Priorities and Goals. The ideal of lifelong learning and career growth is realized and sustained when organizational goals and strategy drive workforce investment, and investments reflect careful analysis and measurement. Norton has sustained the work because their integrated approach creates a "virtuous circle": strategic investment in the workforce, guided by data analysis, creates better outcomes and deepens the case for analytic capacity to monitor workforce development needs and opportunities for investment, as well as the impacts of the investment. This capacity strengthens the case to leadership for further workforce investment while helping them update or realign organizational needs and priorities. As System Director of Talent Acquisition and Workforce Development Jackie Beard observes, "Data from Workforce Analytics empowers Norton's decision makers by proactively shedding light on potential critical talent needs," and whether workforce programs are meeting them.

|| Data from Workforce Analytics empowers Norton's decision makers by proactively shedding light on potential critical talent needs. ||

—Jackie Beard
System Director of Talent Acquisition
and Workforce Development



Promote Workforce Development as a Business Strategy. Key to Norton Healthcare's learning culture is the insistence, from the CEO on down, that all employees understand organizational goals and how their work contributes to meeting them. Workforce Analytics reflects and reinforces this culture; for Senior Analyst Nick Nethery, "the strategic plan guides everything," especially the design of workforce initiatives and the metrics to gauge their success. Just as important as data and metrics are the stories that communicate and personalize organizational priorities and employee success.

Engage Senior Leadership. Senior leader support has been critical to Norton Healthcare's integrated approach, both in creating its comprehensive suite of workforce programs and in sustaining them. Findings from Analytics—forecasting needs, tracking openings, assessing program impacts—keep workforce issues paramount on leaders' agendas and demonstrate, through monthly and quarterly reports as well as presentations tailored to specific requests, the value of continued investment. Both Analytics and Workforce staff, including coaches, cultivate relationships with managers in Human Resources and in the various business units throughout Norton Healthcare.

Invest in Infrastructure. As Chief Human Resources Officer Tony Bohn notes, a decade ago Norton had notable workforce programs such as tuition assistance, but lacked systems and structures dedicated to frontline-workforce development. Creating and staffing an Office of Workforce Development that reports to a Human Resource leader gave the health system the capacity to invest in the front line strategically. Dedicating a position to Workforce Analytics and designing the forecasting tool further expanded this capacity and accelerated the shift from a “transactional” to a “transformative” approach to workforce development and measurement. As a dedicated business unit, Norton’s Office of Workforce Development helps employees explore and advance their careers and, at the same time, ensures that organizational investments have the greatest impact.

Incremental Approach to Workforce Analytics. While analytics require investment, it can be developed incrementally by training internal staff and adapting templates already in use. Beginning with a set of carefully chosen measures and flash points, such as the aging of laboratory technicians cited above, gave Workforce Analytics the opportunity to improvise and gain expertise. In the five years since its advent, Norton’s Workforce Analytics group has expanded its capacity with new variables and reporting methods, adding staff and building closer connections with managers and staff in the system’s Human Resources, business

Norton’s Office of Workforce Development helps employees explore and advance their careers and at the same time ensures that organizational investments have the greatest impact.

units, and information technology units. In parallel with the added capacity, the Office of Workforce Development grew from a single employee to the staff needed to expand programmatic scope.

Co-Investment with Partners. Norton Healthcare, its community partners and other healthcare employers have invested the time and resources needed to give low-skilled individuals in Louisville access to training, education, entry-level jobs, and career pathways in the industry. The Kentucky Health Career Center’s investment in the community mirrors Norton’s workforce development strategy: offer people access to career coaching, assessment, training and education programs. This collaborative investment reflects a shared understanding of community needs and commitment to the city’s “Cradle to Career” goal to align resources for maximum impact.

Advancing frontline workers helps healthcare organizations do good and do well. As proven by Norton Healthcare, frontline investments transform workers’ lives and help organizations meet critical business metrics and quality goals.

CareerSTAT, a national network of healthcare leaders, is committed to helping more organizations develop programs, infrastructure, and culture to advance their frontline workforce by offering peer learning opportunities and resources to organizations just starting or scaling their own frontline investments. Supporting almost two dozen healthcare partnerships in 20 communities, CareerSTAT’s Frontline Healthcare Worker Champions roster of successful programs and organizations documents best practices in the *Guide to Investing in Frontline Healthcare Workers*; it hosts an Employer Academy and offers technical assistance to organizations to develop, implement, scale, and measure frontline investments.



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Kentucky Registered Apprenticeship Summit

September 11 - 12, 2017

Seelbach Hilton Hotel

U.S. unemployment crosses all age groups



36M+

COLLEGE
STUDENTS
DID NOT
GRADUATE



6M+

YOUTH NOT IN
SCHOOL OR
WORKING



2M+

LONG-TERM
UNEMPLOYED
(6 MONTHS OR
MORE)



1M+

SKILLED
VETERANS
SEEKING WORK

Skills gap leaves high-paid positions unfilled



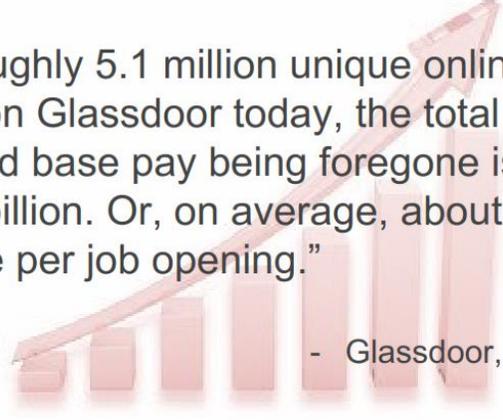
**6.2 Million
unfilled job openings in
the United States of America**

Bureau of Labor and Statistics
August 8, 2017

INTERAPT

Unfilled positions are costing U.S. businesses

“With roughly 5.1 million unique online U.S. job listings on Glassdoor today, the total value of estimated base pay being foregone is about \$272.6 billion. Or, on average, about \$53,594 foregone per job opening.”

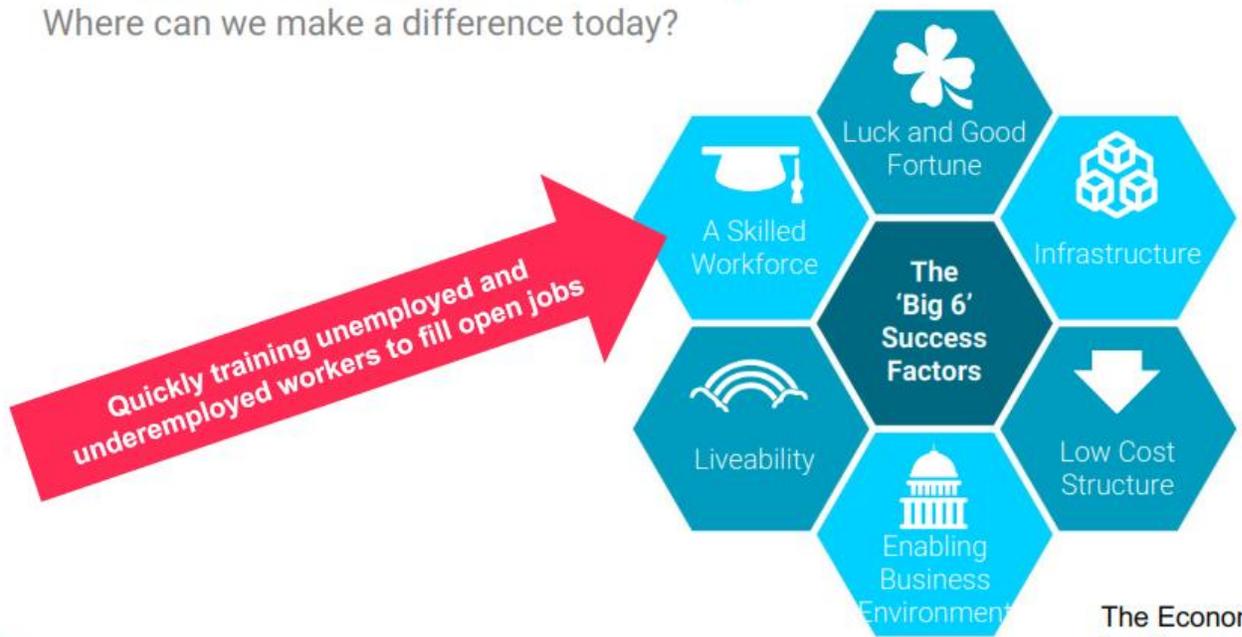


- Glassdoor, Feb. 9, 2017

INTERAPT

6 factors drive an economy to thrive

Where can we make a difference today?



INTERAPT

The Economist Intelligence Unit

Options for retraining

Expense to student or time to completion voids some options



Massive
Online Open
Courseware



Community
and Technical
Colleges



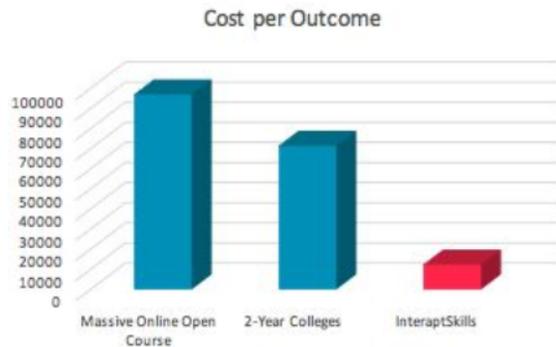
Universities
with 4+ year
degrees



INTERAPT

Cost outcomes validate higher per student cost

Weighing the Outcomes



	Massive Online Open Course	2-Year Colleges	InteraptSkills
Cost per student	\$5,333**/***	\$5,000	\$8,300
Outcome	Certificate	Associate's Degree or Certificate	Technology Job
Success rate	5.5%*	7%	70%
Cost per outcome	\$96,970	\$71,429	\$12,400

INTERAPT

*<https://www.edsurge.com/news/2017-02-22-the-flip-side-of-abysmal-mooc-completion-rates-discovering-the-most-tenacious-learners>

**www.mdpi.com/2227-7102/6/2/14/pdf

***<https://campustechnology.com/articles/2014/01/21/georgia-tech-mooc-based-degree-program-turns-away-nearly-2000-applicants.aspx>

InteraptSkills graduates increase salaries

Pioneer program outcomes

PRE program salary range

\$17,000 - \$21,000

POST program salary range

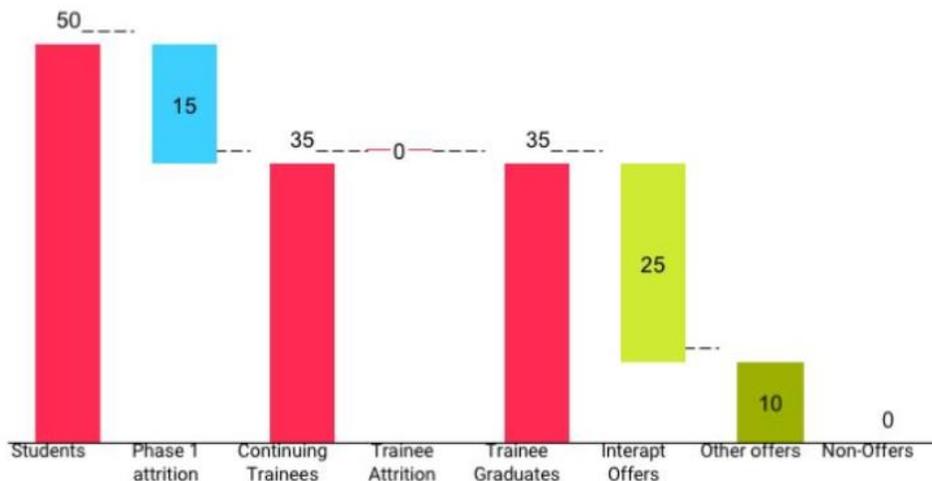
\$36,000 - \$60,000

*"I doubled my salary twice in less than a year.
I was making \$400 every 2 weeks at McDonald's,
then \$400 a week during the training.
Now, I'm making \$400 every 2.5ish days."*

--Jacob W. InteraptSkills Graduate

INTERAPT

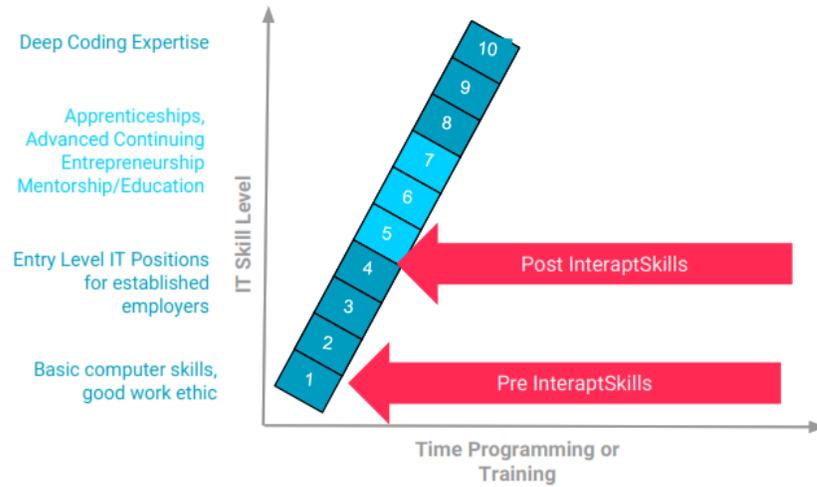
66% of program participants received tech offers



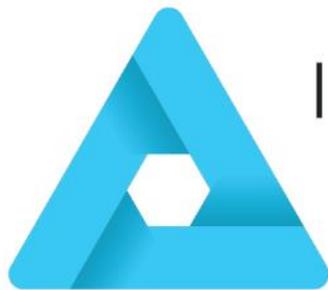
INTERAPT

Increasing skill levels leads to higher employability

Average skill levels pre and post InteraptSkills



INTERAPT

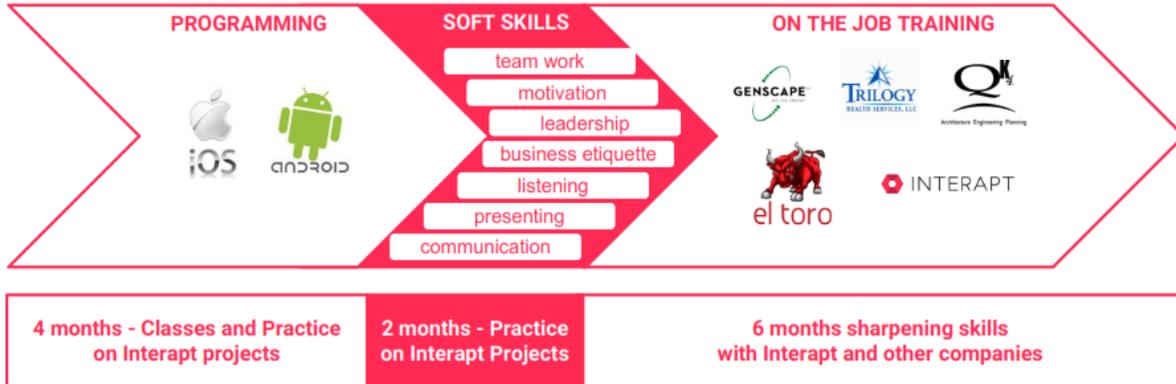


INTERAPT SKILLS

INTERAPT

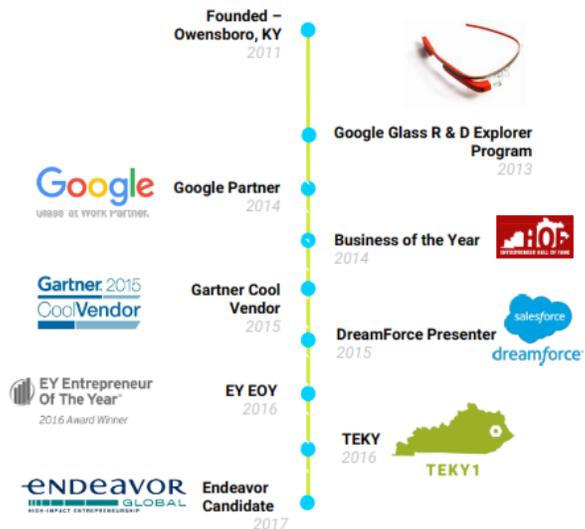
InteraptSkills Apprenticeship Program

Getting people ready to work quickly



An award winning company with top clients

Interapt's key clients and awards



Partnership Opportunities



 INTERAPT



We look forward to working with you!

Ankur Gopal, Founder and CEO
ankur.gopal@interapt.com



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Andrew Farris & Brittany Cress

cc: Joe Duncley - <https://www.flickr.com/photos/25302607@N00>

Secretary Ramsey addresses graduates of Mubea apprenticeship class at Metropolitan Club banquet

Dec 6th, 2016 · 0 Comment



By Mark Hansel

NKyTribune managing editor

The second Mubea apprentice class was recognized Monday night in a banquet at the Metropolitan Club.

Kentucky Labor Secretary Derrick Ramsey was the featured speaker and praised the students and the company for helping to build an advanced manufacturing workforce in the region.

With the completion of the three-year training program, the nine apprentices achieved journeyman status in their respective fields of study.

"I am extremely proud of all of you, but more importantly, I'm excited about what the future holds for you," Ramsey said. "You are in the right place at the right time."

Ramsey, whose first official act as Labor Secretary last year was to congratulate the first group of Mubea apprentices, talked about the opportunities in the advanced manufacturing industry in Kentucky and throughout the world for those who complete the program.

"We're hopeful that you are going to stay here in the state of Kentucky," Ramsey said. "The reason we are hopeful is that everywhere we go in the state of Kentucky, people are saying we have a shortage of skilled workers. You guys have the opportunity, not only to take care of yourself, but take care of your family and earn a pretty good living."

Ramsey has had a storied career and brought a wide range of accomplishments and experience to his role as Labor Secretary.

In 1975, he became the first African-American Starting quarterback in the history of the University of Kentucky.

His professional accomplishments include a nine-year career as an NFL tight end and wide receiver during which he earned a Super Bowl ring. He followed that with stints as community relations director at his alma mater and as athletics director at Kentucky State University.

In 2004, he was appointed deputy secretary of commerce in the administration of Kentucky Gov. Ernie Fletcher. He spent seven years as director of athletics at Coppin State University in Maryland before returning to the Commonwealth to serve in his current capacity.



Ramsey



Mubea North America CEO Doug Cain addresses the nine young men that graduated from the company's apprenticeship program Monday evening (photos by Mark Hansel).

Ramsey said he came back to Kentucky because it is the place he truly loves.

"I'm looking out and projecting where Kentucky should be and where I am going to take Kentucky," Ramsey said. "So when I got here, I had to figure out how could we impact the state of Kentucky? Lo and behold, it's right here in front of you – it's called apprenticeships."

The Mubea apprenticeship program has been in existence in Germany, where the company is based, for 100 years. The Northern Kentucky apprenticeship is modeled after that program, which is

recognized worldwide as the industry leader.

The program allows students to work and get paid while going to school and earn a certification in their chosen field without any education-related debt.

Mubea manufactures automotive components, such as springs, hose clamps and stabilizer bars. It started operating in Kentucky in 1982. The company opened a state-of-the-art tailored rolled blank advanced manufacturing facility in 2013 – the first of its kind in North America.

Christopher Cress of Elsmere, who is certified as a maintenance technician, said he bounced around at some odds-and-ends jobs after graduating from Conner High School in Boone County.

When he heard about the apprenticeship program he couldn't pass up the opportunity for an education and a guaranteed job with a company that he had heard is great to work for.

"I want to be able to, when I have kids, say, 'this is what I did to better myself,' and I want them to follow in my footsteps," Cress, 23, said. "I applied myself and applied the skills I had and now I am ready to start a career. It was rough, but you get used to it and it's something that when you wake up, you look forward to every day."

Mubea North America CEO Doug Cain said it takes a lot of people that each play an integral role to develop a successful apprenticeship program. He welcomed the newest journeymen into the Mubea family, but reminded them of some of the people outside of the company that have also contributed to their success.

"It's not an individual effort on your part," Cain said. "It takes your families, it takes your friends, it takes your girlfriends or boyfriends, but you all have made a significant amount of commitment of time and energy over the last three years to be here."

Last year Mubea also graduated nine apprentices and there are 36 students in the pipeline right now.

Drew Farris, apprenticeship/training manager for Mubea North America, said the students who complete the program have earned the opportunities that are about to come their way.

"In three-and-a-half years, not only have you worked full time, you went to school full time," Farris said. "Most people get off work, go sit on the couch and flip the remote, but you guys are going to school at night and on weekends you're doing homework. That's absolutely amazing."

Ramsey said the success of the Mubea apprentice program and others around Kentucky have inspired Gov. Matt Bevin to dream big.

"He wants Kentucky to be the manufacturing hub of America, so, that's what me and my team are going to do," Ramsey said. "We're going to work like the dickens on apprenticeship."

"Everywhere we go in the state of Kentucky, people are saying we have a shortage of skilled workers. You guys have the opportunity, not only to take care of yourself, but take care of your family and earn a pretty good living,"
Kentucky Secretary of Labor
Derrick Ramsey



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• Your Future •
with the Quick Start Program

Did you know...

- There is a shortage of trained electricians, which means plenty of job opportunities







Promoter of Registered Apprenticeships



SKILLED TRADES





"Train and Pray"



- Era of "Train and Pray"



"Train and Pray"



- Era of "Train and Pray" for Workers Must End
- Attending training hoping to get a job that may not be obtainable, even after completing all the training.



ACCREDITED TRAINING



ACCREDITED

- If not recognized by your future Employer....?

**NOT
APPROVED**



- Have you heard of..
- United States Department of Labor...
- **All** Employers know them by name.





ApprenticeshipUSA

REGISTERED

- REGISTERED.. BY WHO????
- RECOGNIZED BY WHO????



OPEN INTERVIEWS WITH OUR WORKFORCE DEVELOPMENT TEAM

AMTECK is hiring **ELECTRICIANS & ELECTRICAL SUPERVISORS.**
Our workforce development team will be holding open interviews

WHAT APPRENTICESHIP MEANS



- **Work first**
- **Must be employed**



- Then while **working**, be trained over time to become a master of the skills

Go to work.

JOB

WHAT APPRENTICESHIP MEANS



- The masses have got this idea confused with continuing some type of school after high school



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WORK then be Trained to be a MASTER

- Work... Get paid....while Learning.
- Don't create debt..



DID YOU KNOW **45%** OF INCOMING COLLEGE STUDENTS WILL **NEVER** EARN ENOUGH MONEY TO PAY OFF THEIR STUDENT LOANS?



SERIOUSLY. SIT THERE AND THINK ABOUT THAT FOR A MINUTE.



Apprenticeship

- The system of apprenticeship first developed in the later Middle Ages and came to be supervised by craft guilds and town



ELECTRICIANS 7 YEAR PLAN

- To become a Master Electrician in the State of Kentucky also takes about 7 years.
- As long as the person has completed an approved apprenticeship program

5. You may send proof of 6 years of experience with completion of an approved apprenticeship training program consisting of a minimum of 576 classroom hours. (or)

Kentucky Labor Cabinet

And

Kentucky Apprenticeship and Training Council Certification of Completion of Apprenticeship



This is to certify that
Arthur Wayne Brake
has completed an apprenticeship for the occupation
Electrician
under the sponsorship of
AMTECK LLC



WHO NEEDS A LICENSE?

- Anyone who will perform nonexempt electrical work
- without supervision
- by a
- licensed electrician
- or master electrician
- DOES require a license.



LICENSE REQUIRED Electrician

- All electrical work must be performed by,
- or
- under the supervision of,
- a licensed electrician
- or master electrician.



ELECTRICIAN

- In order to work unsupervised, an electrical worker must be a licensed electrician.

LICENSE REQUIRED MASTER ELECTRICIAN

- All electrical contractors must employ at least one master electrician.
- Master electricians are responsible for all electrical work performed under their supervision.

MASTER





1998 In house classes: NON-EMPLOYEES "Quick Start"

2-week long class free to the public.
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after completion.



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Registered Apprentice Programs

3 Different programs

2 in Kentucky (Lexington, and Louisville)

1 for our traveling apprentices based in Tennessee (Dyersburg, TN)





Our completed Apprentices become Licensed Electricians.

State of Arkansas
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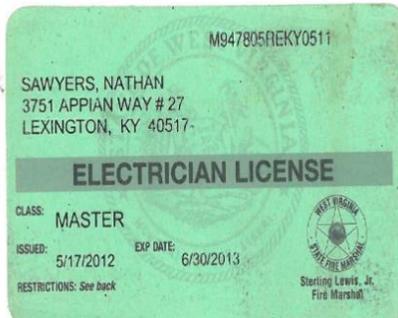
THIS IS TO CERTIFY
ROBERT DUNN
1261 ECTON RD
WINCHESTER, KY 40391

IS LICENSED AS:
Master
Expires: **08/31/2017**

8 Hours CEUs required by 12/31/16



M-9435



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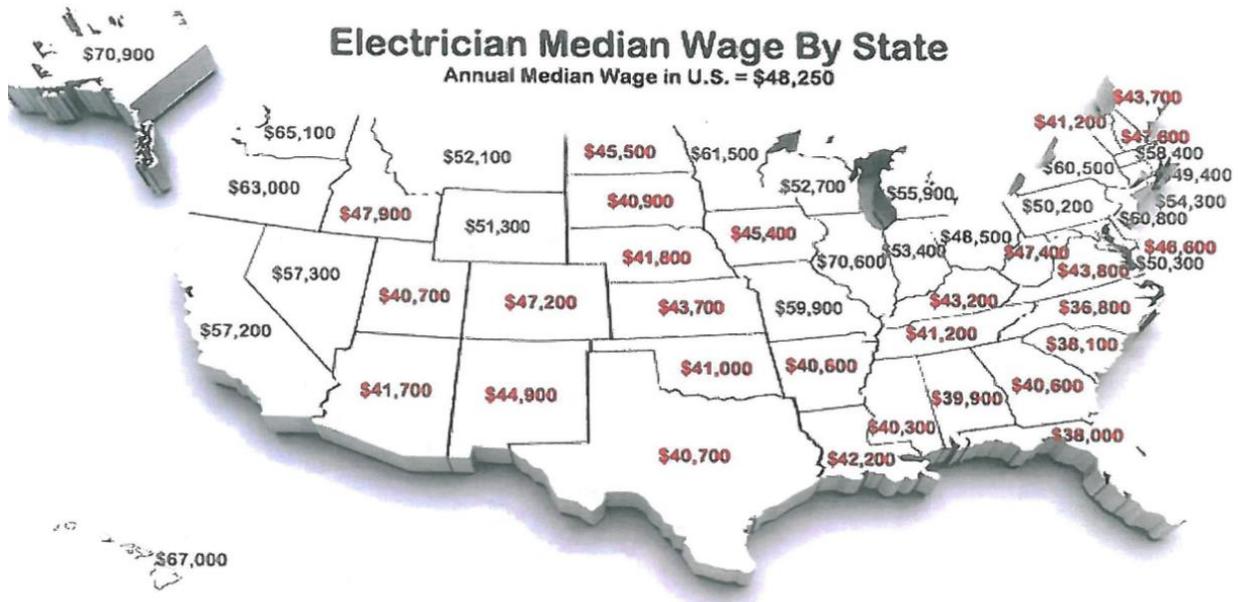


ANTHONY W HOWARD

EE64121

EXPIRATION DATE - 03/31/2015

STATE LICENSE OR CERTIFICATION



Information from mynextmove.org, compiled by JADE Learning, 2012

To become a Licensed Electrician in the State of Kentucky takes about 5 years



APPRENTICESHIP ENROLLMENT PAY SCALE		
BASE JOURNEYMAN RATE		
FIRST YEAR	minimum pay	
FIRST SEMESTER	50%	\$12.50
SECOND SEMESTER	55%	\$13.75
SECOND YEAR	minimum pay	
FIRST SEMESTER	60%	\$15.00
SECOND SEMESTER	65%	\$16.25
THIRD YEAR	minimum pay	
FIRST SEMESTER	70%	\$17.50
SECOND SEMESTER	75%	\$18.75
FOURTH YEAR	minimum pay	
FIRST SEMESTER	80%	\$20.00
SECOND SEMESTER	85%	\$21.25
PASS STATE EXAM (become licensed electrician	90%	\$22.50



Labor's Journey

with Apprenticeship 2016-17

cc-felipe-lopez - https://imgsplash.com/@felopez_nice?utm_source=halikusack&utm_medium=referral&utm_campaign=api-credit

Labor Cabinet Receives \$896,600 Apprenticeship Grant



FRANKFORT, Ky. (Oct. 24, 2016) – The U.S. Dept. of Labor has announced over \$50.5 million in grant awards to 37 states to help expand apprenticeship opportunities across the U.S. – including \$896,600 for Kentucky.

The proposal calls for a workforce pipeline to be created in Kentucky, increasing the number of Registered Apprentices by 1,300 individuals, including women, minorities, 16-24 year olds, individuals age 45+ or older, veterans, and people with disabilities.

“In Kentucky we recognize the value of apprenticeships and the vital role they play as the Commonwealth works to become the manufacturing hub of excellence in America,” said Gov. Bevin. “Employers across the state are in need of skilled laborers, and this funding will help train a workforce ready to fill that need. By re-committing ourselves to fully embracing the power of apprenticeships, we place ourselves in the best position to move Kentucky forward.”

“Receiving this funding is critical to the Labor Cabinet’s goal of expanding the scope of industries with Registered Apprenticeships,” Labor Sec. Derrick Ramsey stated. “We’re very proud of the approximately 1,100 employers and 150 different programs that already exist here in Kentucky, but this award will play an important role in growing those numbers. Kentucky is working toward becoming the manufacturing hub of excellence in America, and I’m proud that this vision is being endorsed by this grant award.”

U.S. Senate Majority Leader Mitch McConnell, who contacted U.S. Secretary of Labor Thomas Perez on behalf of the Kentucky Labor Cabinet, said, “there is a shortage of skilled workers in Kentucky in a number of critical industries, and this competitive funding will help the Kentucky Labor Cabinet implement employer-driven training programs for Registered Apprenticeships in the healthcare, manufacturing, and construction industries. This important project could significantly benefit those seeking a path to employment and meet the demand for skilled labor in an effort to make Kentucky a more competitive place for employers to locate and expand. I was happy to work with Governor Bevin and the Kentucky Labor Cabinet to help secure this important grant.”

Called the ApprenticeshipUSA State Expansion Grant Initiative, this is the second phase of the Dept. of Labor’s strategy to diversify Registered Apprenticeships into new sectors and engage under-served populations. According to the U.S. Dept. of Labor, the grant initiative is intended to:

- Help States advance Registered Apprenticeship as a workforce development strategy and post-secondary education career pathway that maintains the nation’s strong, adaptable, and highly skilled workforce.
- Support integrated, statewide apprenticeship strategies and State capacity to engage industry and meet the demand for new programs in both traditional and non-traditional industries such as IT, Healthcare, Advanced Manufacturing, Building Trades, Cybersecurity, and Business Services.
- Catalyze State innovations to significantly increase Registered Apprenticeship opportunities for all American workers, particularly underrepresented populations in apprenticeship including opportunity youth, women, communities of color, Native Americans, and persons with disabilities, and taking steps to facilitate their successful completion of apprenticeship programs.

Labor Cabinet Forms New Division for Apprenticeships



FRANKFORT, Ky. (December 12, 2016) - As a part of an ongoing effort to rebrand and promote apprenticeships in the Commonwealth, Governor Bevin and the Labor Cabinet launched the “[Kentucky Trained.Kentucky Built.](#)” initiative in September. One key component of this effort is the Division of Apprenticeship – which was recently formed as a part of the Cabinet’s efforts to commit new energy and resources to providing technical and marketing expertise toward growing the role that registered apprenticeships play in the Commonwealth.

“The creation of a Division of Apprenticeship will allow us to bring a single-minded focus to our efforts to bring the potential of apprenticeships to all communities in the Commonwealth,” Labor Secretary Derrick Ramsey said. “Governor Bevin’s vision is for Kentucky to become the ‘Manufacturing Hub of Excellence in North America,’ and this new division will better position the Commonwealth to accomplish this goal. With new resources dedicated to expanding apprenticeships across the state, I’m truly excited to show the world what ‘Kentucky Trained.Kentucky Built’ means.”

There are currently about 1,100 employers across Kentucky with registered apprenticeship programs that employ nearly 3,000 apprentices in various industries. On top of addressing a skills and age gap facing many businesses, the new Division will become a key tool for recruiting new employers to the Commonwealth.

“In speaking with business owners across Kentucky, they all need a pipeline of employees who are trained with industry-specific skills,” said Josh Benton, executive director of workforce development at the Kentucky Cabinet for Economic Development. “They see – as do we – the connection between workforce skill and business success. Establishing the Division of Apprenticeship within the Labor Cabinet is a commitment to both workforce quality and to further defining Kentucky as a top location for business.”

The Division features coordinators who work closely with businesses from across the state on all things related to registered apprenticeships. This includes consulting with businesses looking to begin a registered apprenticeship in addition to helping existing participant-companies administer and market their program. It will also manage a \$896,000 grant from the U.S. Department of Labor called the [ApprenticeshipUSA State Expansion Grant Initiative](#). This funding, awarded to the Cabinet in October, will help increase the number of Registered Apprentices in Kentucky by 1,300 by diversifying the occupational sectors currently being served and providing greater outreach to underserved populations in Kentucky.

Justice to Journeyman, state trying to lower recidivism and increase employment

By *Miranda Combs* | Posted: Mon 4:50 PM, Apr 24, 2017 | Updated: Mon 5:29 PM, Apr 24, 2017



FRANKFORT, Ky. (WKYT) - Traci Martin is on the last year of her five-year stay at the Kentucky Correctional Institution for Women in Shelby County. The prison holds maximum, medium and minimum security inmates. It also houses a new program, Justice to Journeyman. "It's interesting because this is something new for me," Martin said as she smoothed out the inside of a metal rod. Martin is learning a new trade. By the time she is released from custody, she will have significant hours toward an electrician apprenticeship.

"What do you want people to know about people like you that are re-entering the workforce?" WKYT's Miranda Combs asked.

"That we are not all bad. That we shouldn't be judged on our past mistakes and we can be a value to society and have something to offer society," Martin answered.

Justice to Journeyman is a joint effort between Kentucky's Labor Secretary Derrick Ramsey, and Justice and Public Safety Secretary John Tilley. "There are studies that indicate if they have a steady job for over a year, they are sometimes 300% more likely to stay out of prison and that's incredible," Tilley said. "The numbers just jump off the page once they get steady employment," he said.



"Is this Justice to Journeyman a tough sell?" Combs asked Secretary Ramsey.

"No. Why should it be?" Ramsey replied. "Just last year there were over 18,600 people that were released. What are we going to do with them if we don't train them? We can always spend \$24,000 a year to incarcerate them. That makes a whole lot of sense," Ramsey said sarcastically.

In Kentucky, of the offenders released in 2013, by the end of 2016, 48 percent were back behind bars. "Hopefully, it will drive our recidivism rate down, which is our re-offense rate, which means less crime, fewer victims, less strain on the taxpayers here in our communities," Sec. Tilley said.

Right now, Justice to Journeyman is a small pilot program. There are three apprenticeship programs in different prisons in Kentucky. The electrical program at KCIW, a carpentry program at Eastern Kentucky Correctional Complex in Morgan County, and welding at Northpoint Training Center in Boyle County.

Gov. Bevin, Kentucky Delegation Participate in European Apprenticeship Study Visit

Jarrad Hensley Jarrad.Hensley@ky.gov (mailto:Jarrad.Hensley@ky.gov) 502-564-3219 (tel:502-564-3219)
FRANKFORT, Ky. (March 27, 2017) – Gov. Matt Bevin, Labor Secretary Derrick Ramsey, Economic Development Secretary Terry Gill, and Education and Workforce Development Secretary Hal Heiner joined a delegation of U.S. officials and business leaders on an apprenticeship study visit in Germany and Switzerland last week.

Hosted by the National Governors Association (NGA), the trip provided insight into how those countries use apprenticeship models to train their workforces and further develop their economies.

“The key building blocks of a robust economy and job growth are education and workforce development,” said Gov. Bevin. “Apprenticeships are a powerful tool for training and developing workers for the advanced manufacturing jobs of today. Kentucky is on track to become the engineering and manufacturing center of excellence in America. To fulfill this vision, we must study existing best practices from around the world. I was grateful for the opportunity to do exactly that on this trip with NGA.”

The Kentucky delegation met with policy makers and local business representatives at the U.S. Embassies in Berlin and Bern. The trip also featured site visits to manufacturing facilities and local schools to focus on health care, advanced manufacturing, rail industry, and technical informatics.

“The apprenticeship training model has deep roots in Europe’s industrial history,” said Sec. Ramsey. “Being able to study the effects of apprenticeships on these economies firsthand provided us with innovative ideas on ways to better equip Kentucky’s workforce. Kentucky’s economy already features prominent German and Swiss-born companies, and I enjoyed discussing ways we can continue to strengthen our partnership and promote our ‘Kentucky Trained. Kentucky Built’ campaign worldwide.”

Launched in September of last year, the “Kentucky Trained. Kentucky Built” initiative signals Kentucky’s recommitment of new energy and resources toward strengthening apprenticeships across Kentucky. Currently, there are 2,772 apprentices working in 165 different registered trades across nearly 1,100 employers.

“In our conversations with employers across the Commonwealth—whether they be manufacturers, tech-related companies or in the service sector—executives tell us they need more employees who are trained specifically for their company’s needs,” said Sec. Gill. “We’re fortunate to have apprenticeship programs already established in Kentucky and, as part of this trip, we identified best practices and ways to expand our efforts

Gov. Bevin, Kentucky Delegation Participate in European Apprenticeship Study Visit

through 'Kentucky Trained. Kentucky Built.' By further partnering with our corporate citizens and educational institutions to keep the Kentucky workforce pipeline trained at world-class levels, we'll meet the needs of individual businesses and grow the state's economy."

Apprenticeship programs in the U.S. typically range from one to five years in length, but the majority of programs are four years long. For each year of the apprenticeship, the apprentice will receive about 2,000 hours of on-the-job training and a required minimum of 144 hours of related classroom instruction. The Labor Cabinet works with each company to craft a customized curriculum that is specific to each employer's needs. At the completion of the training program, the apprentice receives a nationally recognized certification.

"We are in a workforce crisis in this state, and this mission to Germany and Switzerland offered innovative ideas for creating apprenticeships and other certification programs. Our goal is to better equip our students and adults with the skills needed to fill the great jobs that are open and drive our economy," said Sec. Heiner.

European-owned companies operate more than 200 facilities in Kentucky, employing nearly 33,000 people full time across all sectors of the economy. Between January 2016 and February 2017, European-owned companies announced 26 projects in Kentucky. Those are expected to create nearly 1,100 jobs and about \$418 million in investment. That accounts for more than five percent of all new jobs and over eight percent of investment dollars announced in Kentucky during the same period.

The Commonwealth is home to 74 German-owned facilities, which span industries including automotive, tech, raw materials, logistics, media, chemical production and others. Collectively, German-owned companies employ about 13,500 Kentuckians full-time. From January 2016 through February 2017, German-owned companies announced five projects in Kentucky. Those will bring nearly \$45 million in investment and more than 300 full-time jobs.

Swiss-owned companies operate 19 facilities in Kentucky, employing a total of 2,700 people full-time. Those include providers of crushed limestone, automotive interior and acoustic products, analytical testing, food, beverages, flavorings and logistics services. From January 2016 through February 2017, Swiss-owned firms announced three projects in Kentucky. Those are expected to create more than 50 jobs and nearly \$87 million in investment.

For more information on apprenticeships in Kentucky, visit [KentuckyApprenticeship.com](http://www.kentuckyapprenticeship.com) (<http://www.kentuckyapprenticeship.com/>).

Follow the Kentucky Labor Cabinet on Facebook (<https://www.facebook.com/kentuckylaborcabinet/>) and Twitter (<https://twitter.com/KYLaborSec>) for all the latest updates.

American Metal Works in Paintsville Creates New Apprenticeship Program

Jarrad Hensley Jarrad.Hensley@ky.gov (mailto:Jarrad.Hensley@ky.gov) 502-564-3219 (tel:502-564-3219)
FRANKFORT, Ky. (June 21, 2017) – Labor Secretary Derrick Ramsey joined officials from American Metal Works and Big Sandy Community and Technical College in Paintsville to announce the creation of a new apprenticeship program.

The first of its kind in the region, this CNC Programming apprenticeship will enable area apprentices to begin a 4-year Computer Numerical Control (CNC) program at American Metal Works that will require 2,000 on-the-job training hours and 144 classroom hours per year.

"With nearly 1,100 companies a part of our 'Kentucky Trained. Kentucky Built' apprenticeship program across the state, this partnership is critically important because of its relationship with eastern Kentucky," said Labor Secretary Derrick Ramsey. "Today's announcement represents how community leaders are taking note by coming together to benefit and prepare our Kentucky workers for today's economy. I commend American Metal Works and Big Sandy Community and Technical College for embracing the overwhelming impact that apprenticeships provide toward local workforce development and I look forward to the success that this initiative will bring to the region."

American Metal Works was started in 2016 by James Glass and Dennis Rohrer and is a small business manufacturer of parts for the aerospace, automotive, biomedical, defense, and manufacturing industries.

"The apprenticeship program will help provide our team members with the skills and training necessary for them to succeed in this highly technical and growing industry," said Glass. "Their continued personal growth will allow American Metal Works to become more viable and allow us to provide opportunities for others looking to obtain a career in this ever-growing industry. By developing a strong workforce through the program, Kentucky will become more competitive and better positioned on the world stage."

"As we try to fill the gap of skilled workers that have been lost to off shoring over the last several decades along with the large numbers of advanced manufacturing workers who are now approaching retirement age, these apprenticeships will be vital to the health and well-being of American Metal Works and the industry at large," Rohrer stated. "This program will allow us to recruit and train men and women of various ages and skill levels."

Launched in September of last year, the "Kentucky Trained. Kentucky Built" initiative signals Kentucky's recommitment of new energy and resources toward strengthening apprenticeships across Kentucky. The Labor Cabinet works with each company to craft a customized curriculum that is specific to each employer's needs. At the completion of the training program, the apprentice receives a nationally recognized certification. The alliance between American Metal Works and Big Sandy Community and Technical College began last

American Metal Works in Paintsville Creates New Apprenticeship Program

year when Big Sandy CTC offered to allow American Metal Works to lease a facility. Since then, this strategic partnership has grown to include instructors from Big Sandy CTC who are working with American Metal Works to better align coursework in today's CNC industry.

"The American Metal Works project at Big Sandy Community and Technical College demonstrates the power of partnerships across eastern Kentucky," said Big Sandy CTC Director of Workforce Solutions Kelli Hall Chaney. "So many partners embraced the idea of American Metal Works and worked together to make this dream a reality. If we aspire to do innovative things, we must work collaboratively to leverage the resources of our vast network of community and economic development organizations to bring opportunity to all those who seek it. Big Sandy Community and Technical College strives to be the catalyst that brings lasting transformation to the region."

State Sen. Brandon Smith (R-Hazard) and State Rep. William Wells (R-West Liberty) also offered praise.

"I am thrilled to hear of the new apprenticeship program with American Metal Works, a company that encapsulates the ingenuity and strength of our Appalachian communities," Sen. Smith said. "Innovative companies such as American Metal Works are the future of our region, and I look forward to the success of both the apprenticeship program and its graduates."

"Education and workforce go hand-in-hand, and apprenticeships are one of the best ways to create and grow a workforce that will last for generations," said Rep. Wells. "American Metal Works is blazing new trails for our entire region with this new apprenticeship, and I'm excited for the impact it will have on the young people in our communities. I look forward to the success it will reap as we work to ensure our workforce is educated to meet the needs of industry, and congratulations to everybody involved in securing this important development in Paintsville."

For more information on Registered Apprenticeships, visit www.KentuckyApprenticeship.com.

Follow the Kentucky Labor Cabinet on Facebook and Twitter for all the latest updates.

Phillips Diversified Manufacturing in Annville Creates New Apprenticeship Program



Phillips Diversified Manufacturing in Annville Creates New Apprenticeship Program

Jarrad Hensley Jarrad.Hensley@ky.gov (mailto:Jarrad.Hensley@ky.gov) 502-564-3219 (tel:502-564-3219)
Annville, Ky. (June 27, 2017) – Labor Secretary Derrick Ramsey joined officials from Phillips Diversified Manufacturing in Annville to announce the creation of a new apprenticeship program.

This three-year welding apprenticeship program comes on the heels of another eastern Kentucky apprenticeship announcement from American Metal Works last week. Together, these programs represent an on-going effort to strategically cultivate more skilled labor in eastern Kentucky.

"Since 'Kentucky Trained. Kentucky Built.' was launched in September, we have made a conscious effort to grow the number of apprenticeships in eastern Kentucky," said Labor Secretary Derrick Ramsey. "Today's announcement showcases manufacturers such as Phillips Diversified, who have made the decision to tackle the skill and age gaps head on through apprenticeships. I am grateful for the leadership that Clyde and his team have taken towards this goal and I look forward to the success that this program will bring to workplace development in the region."

Phillips Diversified Manufacturing was founded in 1993 by Clyde Phillips and is a contract manufacturer for printed circuit board assembly, appliance control panels, metal fabrication and electromechanical & electronic assemblies. Phillips Diversified Manufacturing has several well-known clients, including Lexmark, Toyota, GE, Trane and Big Ass Kentucky. It employs over 220 people in Clay, Jackson, and Laurel counties.

"I am really encouraged by the acceptance of our Welding Apprenticeship Program from our associates," said Phillips. "As a company located in southeastern Kentucky, we must continually search for skilled people and train our existing associates in various needed skills. This apprenticeship program will ensure a win-win situation for our area, our associates as well as our company."

"The Kentucky Labor Cabinet was incredible to work with - providing guidance and support throughout this process," said Special Projects Manager and Apprenticeship Director Tracy Stivers. "We began by simply identifying what our most urgent occupation training needs were, then began planning the work processes needed for on-the-job training of our apprentices and related classroom instruction needs. Upon completion of our 3-year program, apprentices will receive a nationally recognized certification, greatly improving their skill level, wages and future employability. Phillips Diversified Manufacturing will be creating its own in-house pool of highly-skilled welders which in turn will help us better meet the specific quality expectations of our customers."

Phillips Diversified Manufacturing in Annville Creates New Apprenticeship Program

The "Kentucky Trained. Kentucky Built." initiative signals Kentucky's recommitment of new energy and resources toward strengthening apprenticeships across Kentucky. Since November 1st, the number of apprenticeships in Kentucky have increased by 39 percent. In total, the Kentucky Labor Cabinet has registered nearly 182 different programs that apprentice nearly 3,100 people across the state.

State Sen. President Robert Stivers (R-Manchester) and State Rep. Marie Rader (R-McKee) also offered praise.

"I am pleased to hear that Phillips Diversified, a long-time eastern Kentucky employer, is announcing this new apprenticeship program to train the next generation of Kentucky manufacturers," Sen. Stivers said. "The company has been a strong economic partner in our region, and this apprenticeship program is yet another means of giving back to our community. Phillips Diversified is truly leading the way in innovative learning and I look forward to the success of this program and its graduates."

"The apprenticeship program will have a huge impact on our young people and the future of our entire region," said Rep. Rader. "Not only is Phillips Diversified investing in a future workforce, but the program is going to make sure our people are trained and prepared to fill the jobs in our communities, and in turn will have the ability to support themselves and their families for years to come. I commend Phillips Diversified for their commitment to our workers, and for their investment in this incredibly valuable program."

For more information on Registered Apprenticeships, visit www.KentuckyApprenticeship.com (<http://www.KentuckyApprenticeship.com>).

Follow the Kentucky Labor Cabinet on Facebook and Twitter for all the latest updates.

Norton Healthcare in Louisville to Begin Innovative Apprenticeship Program for Nurses



Norton Healthcare in Louisville to Begin Innovative Apprenticeship Program for Nurses

Jarrad Hensley Jarrad.Hensley@ky.gov (mailto:Jarrad.Hensley@ky.gov) 502-564-3219 (tel:502-564-3219)
Louisville, Ky. (June 29, 2017) – Gov. Matt Bevin and Labor Deputy Secretary Mike Nemes joined officials from Norton Healthcare in Louisville today to announce a new apprenticeship for nurses that is one of the first of its kind in the country.

This Student Nurse Apprenticeship Program is a paid apprenticeship that provides educational and clinical experiences over 12 to 18 months to prepare students for a registered nurse role after graduation. Eligible students include nurses who are in their junior year of a Bachelor of Science degree in Nursing program or with one semester completed of an associate degree in nursing program.

“Innovative training programs, like this one at Norton Healthcare, deserve to be celebrated,” said Gov. Bevin. “I have challenged Kentucky employers to think and act boldly, and Norton Healthcare has answered that challenge in an impressive way. This apprenticeship program is one of the first of its kind in the country and will be transformational for Norton’s workforce. I believe it will inspire other employers around Kentucky to explore ways that apprenticeships can take their business—and Kentucky—to the next level.”

With just over 70,000 active registered nurses currently in Kentucky, it is projected that an additional 4,500 nurses will be needed in the next 10 years to meet demand. The 125 new apprentices in this program will both provide Norton Healthcare with an effective workforce recruitment and training tool while also displaying the potential that this could bring to other healthcare providers across the county.

“The ‘Kentucky Trained. Kentucky Built.’ registered apprenticeship initiative encompasses a new era of apprentice able trades never before seen in the Commonwealth, and today provides a fitting example of this,” Labor Secretary Derrick Ramsey stated. “Nursing is a new frontier for apprenticeships, but with Norton Healthcare’s vision, we couldn’t be more excited to partner with them and the new student nurse apprentices who are taking advantage of this wonderful program to further their careers. It’s a win for Norton Healthcare, the apprentices, and the entire healthcare community as we continue to seek ways to address the workforce needs in this critical industry.”

Serving the Greater Louisville region and beyond for more than 130 years, the hospital and health care system is the Louisville area’s third largest private employer. The Louisville-based not-for-profit system includes five Louisville hospitals with 1,837 licensed beds; seven outpatient centers; 13 Norton Immediate Care Centers; more than 14,000 employees; more than 850 employed medical providers; and approximately 2,000 total physicians on its medical staff.

Norton Healthcare in Louisville to Begin Innovative Apprenticeship Program for Nurses

"We know the value in having highly trained nurses and other professionals to help us meet the health care needs of our community," said Russell F. Cox, president and chief executive officer, Norton Healthcare. "By offering an apprenticeship for nurses, we not only help individual students reach their goals, but we help ensure we continue to have these highly trained professionals."

"This program will reinforce nursing education and awareness of the professional nurse role, as well as help increase the students' self-confidence and understanding of organizational structure and operations within a world-class health care setting," said Tracy E. Williams, DNP, R.N., senior vice president and system chief nursing officer, Norton Healthcare.

This program will work in conjunction with the student's school of nursing while learning hands-on experience with a Norton Healthcare mentor. Upon completion of the training program, the apprentice will receive a nationally recognized certification allowing employers, such as Norton, to better meet expectations of their patients through a highly-skilled and trained workforce.

The "Kentucky Trained. Kentucky Built." initiative, launched last year, signals Kentucky's recommitment of new energy and resources toward strengthening apprenticeships across Kentucky. Since last November, the number of apprentices in Kentucky have increased by 39 percent. In total, the Kentucky Labor Cabinet has registered nearly 1,100 different programs with employers including a new emphasis on growing trades within the healthcare and information technology sectors.

For more information on Registered Apprenticeships, visit www.KentuckyApprenticeship.com.

Follow the Kentucky Labor Cabinet on Facebook and Twitter for all the latest updates.

Edwards Moving and Rigging, Inc. in Shelbyville Creates New Transportation Apprenticeship Program

Jarrad Hensley Jarrad.Hensley@ky.gov (mailto:Jarrad.Hensley@ky.gov) 502-564-3219 (tel:502-564-3219)
Frankfort, Ky. (July 24, 2017) – Officials from Edwards Moving & Rigging, Inc. in Shelbyville today announced the creation of a new moving and rigging apprenticeship program in conjunction with the Kentucky Labor Cabinet.

This three-year apprenticeship in specialized transportation and rigging will provide each participant with both the experience and training from equipment manufacturers to be an accomplished rigger. This program consists of 2,000 on-the-job training hours and 144 classroom hours per year.

"Edwards Moving & Rigging is the first company in Kentucky to provide an apprenticeship of this kind," said Labor Secretary Derrick Ramsey. "Apprenticeships provide a kind of forward-thinking solution that will help us prepare Kentucky for a skilled workforce. This is why I am proud to have Edwards Moving & Rigging join our 'Kentucky Trained. Kentucky Built.' network and I look forward to the success this program will bring to Shelby County."

Since 1961, Edwards Moving & Rigging, Inc. has provided heavy hauling and rigging solutions for over-dimensional loads across North America and has expanded to meet international demand. The company serves a variety of industries including nuclear, petrochemical, manufacturing and automotive, and power generation. Edwards now employs 120 people at its headquarters in Shelbyville.

"Edwards is excited to establish a registered apprenticeship program," said Jason Edwards, President, Edwards Moving & Rigging, Inc. "We believe this is a great opportunity for both our company and the Commonwealth's workforce. We will develop skilled workers with high paying careers."

"Our partnership with the Kentucky Labor Cabinet to create a three-year apprenticeship program is an example of our commitment to safety, quality, and service," said Executive Vice President Jennifer Schuster. "It will help us develop and maintain a highly skilled and trained workforce in a competitive market. We are thrilled to offer this opportunity."

The 'Kentucky Trained. Kentucky Built.' initiative signals Kentucky's recommitment of new energy and resources toward strengthening apprenticeships across Kentucky. Since last November, the number of apprentices in Kentucky have increased by 39 percent. In total, the Kentucky Labor Cabinet has registered nearly 182 different programs that apprentice 3,100 people across the state.

State Rep. Robert Rothenburger (R-Shelbyville) also offered praise.

Edwards Moving and Rigging, Inc. in Shelbyville Creates New Transportation Apprenticeship Program

"I commend Edwards Moving & Rigging for bringing an apprenticeship program to Shelbyville," said Rothenburger, who serves on the House Economic Development and Workforce Investment Committee. "There are many people in Shelby County who are ready and willing to work, but may lack the specialized skills needed to find employment with great companies like Edwards. This apprenticeship program, along with recently enacted pro-jobs policies, will go a long way toward getting Kentuckians back to work and filling highly-skilled, well-paying jobs that have long gone unfilled."

For more information on Registered Apprenticeships, visit www.KentuckyApprenticeship.com.

Follow the Kentucky Labor Cabinet on Facebook and Twitter for all the latest updates.

KEES money to be utilized by students for apprenticeships

Print

Email

Details

Written by DAISY OLIVO (ARC)



House Legislation to Support Students, Apprenticeships Signed Into Law



FRANKFORT, Ky. (April 13, 2017) – Recently, Governor Matt Bevin gave his signature of approval to House Bill 206. This measure, sponsored by Rep. Bam Carney, R-Campbellsville, allows KEES money to be utilized by students who choose to take part in an apprenticeship, as opposed to attending a college or university. Students are increasingly turning to apprenticeships as an alternative to traditional higher education.

KEES, or the Kentucky Educational Excellence Scholarship, is funded by proceeds from the state lottery, and is awarded to students who receive at least a 2.5 high school GPA, on a sliding scale.

The legislation is a key part of an effort to expand non-traditional and technical education, an acknowledgment that a four-year, university pathway does not work for everyone. Employers increasingly cite the lack of a prepared workforce as a hindrance to investing further in the Commonwealth.

HB 206 also puts the dual credit scholarship program under the purview of the Kentucky Higher Education Assistance Authority

This bill is the third piece of legislation that Rep. Carney has authored, and has had signed into law this session. Carney serves as chairman of the House Committee on Education.



Participants

Alex Englen

Allen Rose

Amy Irwin

Andrea Murray

Angie College

Ankur Gopal

Barbara Swartz

Beth Cassity

Betty Montgomery

Bo Matthews

Brad Roller

Brandon Bardin

Brenda Demic

Brian Zilich

Brittany Corde

Carl Lucas

Carl Wilson

CC Callens

CEO Craig Bouchard

Chris McDavid

Chris Strong

KY Labor Cabinet

Sullivan University

Barren County Schools

CTI Foods

Adecco

Interapt

Zeon Chemicals, LP

Elizabethtown Community and Technical
College

KDE

Barren County Schools

Maher & Maher

CTE/DJJ

Kentucky Labor Cabinet

Alliant Technologies

Maysville Community and Technical
College

Zeon Chemicals

Pura Vida Travel Agency

TARC

Brady Industries

Ashland Community & Technical College

Coroplast LLC

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Christina Columber	Christina Columber
Christina Weeter	KDE
Cindy Hooper	Clariant
Cordelia Harbut	Kentucky Commission on Women
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Danny Tonkin	Big Sandy Community & Technical College
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Deputy Secretary Jonathan Grate	Justice and Public Safety Cabinet
Deputy Secretary Mike Nemes	Kentucky Labor Cabinet
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Diana Jarboe	Kentucky Labor Cabinet
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Diane Mackenzie	Jefferson County Public Schools
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Dr. Paul Schreffler	KCTCS
Dr. Stephen Pruitt	Department of Education
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Ervin Dimeny	KY Labor Cabinet
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Jackie Beard	Norton Healthcare
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Jarrold Shadowen	Paducah Electrical JATC
Jeff Arnold	DJJ
Jeff Fredline	C & C Press Repair LLC
Jena Collins	Apple
Jennifer Schuster	Edwards Moving & Rigging
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Jimmie Wilson	Carl D. Perkins Job Corp Center
Jimmy McKinney	J & R Construction Services, I
Jon Dougherty	Amteck
Karen Smith	JCPS
Kelli Chaney	Big Sandy Community and Technical College

Kevin O'Neill	West Kentucky Community and Technical College
Kim Myers	Southcentral KY Community and Technical College
Kimberly Blanton	TARC/HR
Kristen Hill	Frost Brown Todd
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Richard Roth	SMART Local #110
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Tammy Baker	Options Unlimited
Terry Miller	JCPS Academies of Louisville
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Todd Schmiedeler	Trilogy Health Services
Tonia Anderson	Kentucky Career Center
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