



Labor Education Alignment Program

Annual Report 2016



Tennessee Higher Education Commission

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Executive Summary

In 2013, Senate Majority Leader Mark Norris (R-Collierville) and House Majority Leader Gerald McCormick (R-Chattanooga) sought to address the growing mismatch between workforce needs and the supply of qualified workers in Tennessee by passing Public Chapter 338, establishing the Labor Education Alignment Program (LEAP).

In October 2014, \$10 million was made available to communities through a grant competition. In total, 27 proposals were submitted for review and 12 were selected to receive LEAP grants. The successful grant proposals targeted skills gaps in sectors with the largest skills deficits and workforce needs, namely advanced manufacturing, mechatronics, information technology (IT), and career readiness (soft skills).

LEAP's primary goal is to close skills gaps by ensuring that students enrolled in courses provided by Tennessee Colleges of Applied Technology (TCATs) and community colleges gain the necessary skills to meet the requirements of high-skill and high-technology jobs demanded by industry leaders in the state. LEAP accomplishes this goal through grant funding to communities for the development of a framework for regional partnerships – comprised of postsecondary institutions, industry partners, workforce development professionals, and K-12 educators, particularly those associated with Career and Technical Education (CTE). Collectively, the stakeholders create tailored workforce pipelines designed to provide the requisite technical skills that meet local employers' needs.

In LEAP's first year of operation, Tennesseans from 51 counties have participated in 15,584 training and workforce development opportunities created by the LEAP grants. Specifically:

- As of December 2015, 1,591 high school students have enrolled in courses, either funded by LEAP or enhanced by LEAP funds, where they can receive training in advanced manufacturing and IT. These students may also earn college credit in LEAP-supported courses that will lead to postsecondary credentials in these fields.
- 630 students have enrolled in community college and TCAT programs supported by LEAP-funded equipment and instructors. Enrollment will enable them to complete a credential and gain employment in advanced manufacturing and/or IT sectors.
- 13,363 students have engaged in extracurricular programming, including career readiness initiatives, work-based learning experiences, academic clubs, and career exploration programs, exposing them to career fields surrounding advanced manufacturing and IT.

As outlined in the program overviews, each LEAP site has seen major growth and success in just the first year of implementation. The program directors and educators are committed to on-going success and eager for the opportunity to continue to grow and serve even more students. Given the success of LEAP in its first year, and the significant potential for even greater future success, this report offers recommendations to the Tennessee General Assembly for consideration in the upcoming legislative session. These recommendations include:

- Appropriating funds for sustaining the minimal costs associated with each of the current LEAP projects, such as instructor salaries, to enable an expansion of program capacity and increase the number of students served.
- Expanding LEAP program availability to unserved regions in Tennessee while continuing to embed a successful framework for community partnerships.
- Examining opportunities for funding work-based learning and internships as a component of the workforce development initiative.



I. The Context for LEAP

Recent technological advances, from integrated data and information systems to 3D printing and robotics, have increased productivity and growth across all facets of American industry. As these new technologies become more fully integrated into the workplace, employers are seeking an increasingly sophisticated and skilled workforce to interact with this modern environment.

In recent years, Tennessee has experienced great economic growth and expansion, sharpening its competitive edge in the world's economy.¹ If this trend is to continue, it is critical that communities across the state understand how the modern workplace is being reshaped and how Tennessee is poised to respond with strategic efforts to produce a more sophisticated workforce.

To meet the needs of this more sophisticated work environment, employees must demonstrate increasingly advanced critical thinking and skill-based competencies through industry-recognized certification and postsecondary credentials. Economic development models have predicted that nearly two-thirds of all jobs in the coming decade will require a postsecondary credential to signal mastery of relevant competencies.² This growing mismatch between workforce demands and the supply of qualified workers is known as the "skills gap" and poses a formidable challenge to the continued prosperity of communities across Tennessee.

For example, high-skill, technology-intensive sectors, such as advanced manufacturing and information technology (IT), have experienced tremendous growth in recent years. Both sectors account for 12 of the top 36 short-term and 17 of the top 36 long-term in-demand occupations throughout Tennessee.³ While these industries continue to grow, however, the widening skills gap presents a challenge as employers try to fill new positions with qualified candidates.

Along with addressing the skills gap issues created by industry growth, filling open positions created by a retiring workforce is an additional challenge. The Tennessee Department of Economic and Community Development notes that a number of occupations within advanced manufacturing and IT currently have some of the highest shares of workers over the age of 55 (more than 20 percent of the employed sector).

Occupations with both short-term and long-term demand projections with a relatively high share of workers age 55 or older include:

- Tool and Die Makers
- Industrial Engineers
- Maintenance and Repair Workers, General

¹ Tennessee Department of Economic & Community Development & Center for Economic Research in Tennessee. (2015). 2015 Annual LEAP Report: An Occupational Analysis.

² Carnevale, A. P., & Smith, N. (2012). A decade behind: Breaking Out of the Low-Skill Trap in the Southern Economy. Washington, DC: Georgetown University.

³ Tennessee Department of Economic & Community Development & Center for Economic Research in Tennessee. (2015). 2015 Annual LEAP Report: An Occupational Analysis.

- Heavy and Tractor Trailer Truck Drivers
- Medical Equipment Repairers
- First-Line Supervisors of Mechanics, Installers, and Repairers
- Production, Planning, and Expediting Clerks
- Operations Research Analysts
- Information Security Analysts
- Medical and Clinical Laboratory Technologists
- Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products
- Dispatchers, except Police, Fire, and Ambulance
- Bus and Truck Mechanics and Diesel Engine Specialists

Industry expansion coupled with the high rate of retirement from the current workforce places tremendous pressure on our communities to ensure that citizens across the state are equipped with the skills and requisite education to thrive in complex workplaces.



II. LEAP Overview

The Development of LEAP

In 2013, the Tennessee General Assembly passed Public Chapter 338, sponsored by Senate Majority Leader Mark Norris (R-Collierville) and House Majority Leader Gerald McCormick (R-Chattanooga), to establish the Labor Education Alignment Program (LEAP), addressing the growing mismatch between workforce needs and the supply of qualified workers in Tennessee. Under the charge of the Tennessee Higher Education Commission (THEC), LEAP serves as the workforce alignment and accountability component of Governor Bill Haslam's Drive to 55 initiative, which aims to get Tennessee to a postsecondary educational attainment rate of 55 percent by the year 2025.

Beyond serving as a statewide postsecondary completion goal, the Drive to 55 is a workforce development goal: Tennesseans should be trained and credentialed in high-demand fields to meet the needs of the state's workforce. As outlined in THEC's Master Plan for Tennessee Postsecondary Education, THEC has placed a high priority on addressing the state's economic expansion, workforce development, and research needs over the next ten years, aligning with the goals of the Drive to 55.⁴ Given its emphasis on postsecondary education and workforce alignment, LEAP is an integral strategy for reaching Tennessee's education and workforce goals. LEAP is designed to encourage collaboration across education and industry to ensure that students enrolled in courses provided by Tennessee Colleges of Applied Technology (TCATs) and community colleges gain the necessary skills to meet the requirements of high-skill and high-technology jobs throughout the state. THEC, through LEAP, will ensure that higher education is highly responsive to regional workforce needs by promoting degree programs designed to quickly meet employer demands.

Creating Local LEAP Programs

In 2014, through a competitive grant process, LEAP provided funding to community-led partnerships aligning educational training and postsecondary credentials with the needs of regional industry partners. LEAP programs are designed to meet the unique needs of individual communities by being flexible and responsive in their program proposals. To meet these community-specific needs, local LEAP programs selected stakeholders to partner with their respective programs, identify regional workforce needs, and establish pipelines of trained job candidates. These stakeholders include postsecondary institutions, industry partners, workforce development professionals, and K-12 educators, particularly those associated with Career and Technical Education (CTE). The partnerships empower communities to address challenges in all phases of the creation and sustainability of these proposed workforce pipelines – from K-12 through postsecondary education and into the workplace.

The initiatives being implemented at the local level by LEAP programs support efforts at the state government level. In 2014, Governor Haslam convened the Workforce Sub-Cabinet, comprised of leadership from the Tennessee Departments of Labor and Workforce Development, Economic and

⁴ Postsecondary Attainment in the Decade of Decision: The Master Plan for Tennessee Postsecondary Education 2015-2025. Available: <https://www.tn.gov/assets/entities/the/attachments/MasterPlan2025.pdf>

Community Development, Human Services, and Education, as well as the University of Tennessee system, the Tennessee Board of Regents, and THEC. The Workforce Sub-Cabinet selected the initial LEAP programs and, on an on-going basis, will review the local LEAP programs and ensure that LEAP is positioned to meet the state's workforce development needs.

Overview of Local LEAP Programs

The request for proposals (RFP) for local LEAP programs was released in October 2014, making available a total of \$10 million for program grants across the state. The maximum funding available to a single grant was \$1 million and each grant award was for a two year term (2015-2017). A local match of 10 percent of the total award, up to \$50,000, was required to demonstrate local commitment to the program's goals.

As noted, LEAP was designed to be inclusive, serving the different needs of communities across the state. For this reason, proposals were required to include key local stakeholders in a regional collaborative consisting of, but not limited to, the following:

- Local industry partners;
- Postsecondary institutions;
- K-12 administrators, educators, and CTE faculty; and
- Economic development agents, such as local chambers of commerce, workforce boards, Local Workforce Investment Area (LWIA) agencies, etc.

Additional data confirming industry need and projections for growth was required, along with evidence the program would serve at least three counties, with exception for the state's four largest metropolitan centers (Chattanooga, Knoxville, Memphis, Nashville). Grant applicants were also required to submit a strong plan for long-term sustainability beyond the grant period.

In total, 27 proposals were submitted for review, and 12 were selected to receive LEAP grants. The programs chosen to receive funding are listed on the following two pages of this report.

Counties Served by Local LEAP Programs



Funded LEAP Programs

Project Name	Higher Education Partner(s)	Project Lead(s)	Counties Served	Amount Awarded
Advanced Manufacturing, Industrial Maintenance, & Mechatronics in the Upper Cumberland	TCAT Livingston	TCAT Livingston	Clay, Jackson, Overton, Putnam, White	\$684,000
Advanced Manufacturing and Workforce Center	Roane State Community College TCAT Harriman	Roane State Community College	Anderson, Morgan, Roane	\$970,000
Closing Gaps Through Partnerships	Columbia State Community College Martin Methodist College TCAT Pulaski	South Central Tennessee Workforce Alliance	Bedford, Giles, Franklin, Lawrence, Lewis, Marshall, Wayne	\$970,000
CPT Pathway to Advanced Manufacturing	Dyersburg State Community College TCAT Covington TCAT Jackson TCAT McKenzie TCAT Newbern TCAT Paris TCAT Ripley	Dyersburg State Community College Northwest Tennessee Workforce Board	Benton, Carroll, Crockett, Dyer, Gibson, Henry, Lake, Lauderdale, Obion, Tipton, Weakley	\$850,000
Filling the Gaps Between Industry and Employees with Manufacturing Technology	TCAT Shelbyville	South Central Tennessee Development District	Bedford, Franklin, Lincoln, Marshall	\$970,000
IT Pathway Collaborative	Columbia State Community College Nashville State Community College Volunteer State Community College	Nashville Technology Council	Davidson, Sumner, Williamson	\$850,000

Project Name	Higher Education Partner(s)	Project Lead(s)	Counties Served	Amount Awarded
LEAP Memphis	Southwest Tennessee Community College	Greater Memphis Alliance for a Competitive Workforce	Fayette, Shelby	\$743,500
LEAP to Success	Jackson State Community College TCAT Crump TCAT Jackson TCAT McKenzie TCAT Paris TCAT Whiteville University of Memphis	Jackson State Community College	Carroll, Chester, Crockett, Decatur, Gibson, Hardeman, Hardin, Haywood, Henderson, Henry, Madison, McNairy	\$900,000
MAD About Technology: Mobile Applications Development and Innovative Technologies	Columbia State Community College	Columbia State Community College	Lawrence, Maury, Williamson	\$135,918
Manufacturing and Mechatronics for Soldiers and Students (M2S2)	Austin Peay State University Nashville State Community College TCAT Dickson	Nashville State Community College North Tennessee Workforce Board	Cheatham, Dickson, Montgomery	\$992,037
Regional Apprenticeship Preparedness Program (RAPP)	Cleveland State Community College TCAT Athens	Southeast Tennessee Development District	Bradley, McMinn, Meigs, Polk	\$946,280
Strengthening the Lakeway Links: Providing a Demand Driven Workforce Supply Chain	TCAT Morristown Walters State Community College	TCAT Morristown	Grainger, Hamblen, Hawkins	\$988,000



III. LEAP: The Numbers

Pursuant to Tennessee Code Annotated, Section 49-7-1210, THEC is required to report degree completions and job placement rates for all LEAP projects. LEAP coursework and job training commenced in Fall 2015, therefore data on degree completion is not yet available due to the limited timeframe. However, when students have sufficient time to complete LEAP coursework, THEC will provide a complete snapshot demonstrating course completion, degree attainment, and job placements. More comprehensive data will be available in January 2017.

In LEAP's first year of operation, **Tennesseans from 51 counties have participated in 15,584 training and workforce development opportunities** created by the LEAP grants:



1,591 high school students have enrolled in courses that have been initiated or expanded by LEAP programs as of December 2015. Students completing these courses will be eligible to apply their training to earn college credit in a variety of high-demand fields, such as advanced manufacturing, electrical engineering, and mechatronics. These students will serve as the foundation for new workforce pipelines that will benefit the state for years to come.



630 students have enrolled in community college and TCAT programs supported by LEAP-funded equipment and instructors. These students are eligible to earn Mechatronics and Industrial Maintenance certificates or an Associate of Applied Science degree.



13,363 students across middle school, secondary, and postsecondary education levels have engaged in LEAP-funded extracurricular programming, including career readiness initiatives, work-based learning experiences, academic clubs, and career exploration programs.



IV. Model LEAP Partnerships

To ensure that communities are fully committed to the success of LEAP, the RFP required that successful proposals demonstrate active participation and engagement from local employers. Among the funded programs, industry partners demonstrated commitment in a number of ways by:

- Creating paid internships for students to gain professional experience while completing coursework.
- Donating factory-grade equipment and instructors to provide real-world classroom experiences for students.
- Hosting job-shadowing days.
- Participating in career fairs and open houses.

While there are many examples of strong industry partnerships, two industry partners that demonstrated exceptional coordination with their higher education partner through the LEAP program were Alcoa Howmet and SL America.

Alcoa Howmet

Alcoa Howmet, a supplier of complex ceramic cores used in the manufacturing of airplane turbines, partnered with the LEAP project coordinated by TCAT Morristown, “Strengthening the Lakeway Links: Providing a Demand Driven Workforce Supply Chain,” to provide paid summer internships to local high school students. Four students (pictured) were assigned to managers from a variety of divisions throughout the Alcoa Howmet manufacturing plant, including preventative maintenance, process management, and engineering. Students were exposed to the day-to-day operations of the plant and actively participated in solving production issues on the plant floor.



High school students interning at Alcoa Howmet pose with their summer internship managers. The internships were a result of the “Strengthening the Lakeway Links” LEAP program.

SL America

SL America, an automotive supplier and manufacturer, partnered with the LEAP project coordinated by Roane State Community College, "The Advanced Manufacturing and Workforce Center." The company provided additional equipment and faculty expertise for the new LEAP training facility in Clinton. SL America's injection molding machine was donated directly from the factory floor and provided students with the opportunity to gain an additional set of skills outside of the traditional mechatronics curriculum. Direct exposure to injection molding processes improved graduates' chances of being hired by a number of additional regional manufacturers immediately following the completion of the program. SL America also provided an experienced technician to train students on this sophisticated equipment at the center.



An instructor from the Clinton Higher Education and Workforce Training Facility demonstrates the uses of the injection molding machine donated to Roane State Community College by SL America.



V. LEAP Project Profiles

A total of 27 proposals for grant funding were submitted for consideration by the Governor's Workforce Sub-Cabinet in 2014. From this pool of applicants, 12 proposals were selected to provide workforce training in communities across all three grand divisions of the state, ranging from the most rural to the largest metropolitan areas. Proposal objectives were supported with substantial data from THEC/University of Tennessee Labor Supply-Demand Studies, Tennessee Department of Economic and Community Development, Tennessee Department of Labor and Workforce Development, and any available local surveys and reports to confirm regional needs. As a result, many proposals addressed skills gaps in sectors with the largest skills deficits and workforce needs, namely advanced manufacturing, mechatronics, information technology, and career readiness/soft skills.

This section contains profiles, project overviews, and data summaries for each of the programs receiving LEAP funding. Information and data for each profile, including enrollment headcounts, were provided by the individual LEAP programs.

Advanced Manufacturing, Industrial Maintenance, & Mechatronics in the Upper Cumberland



The “Advanced Manufacturing, Industrial Maintenance, & Mechatronics in the Upper Cumberland” LEAP project creates a pathway from K-12 education to postsecondary programs in advanced manufacturing. Course offerings include both dual enrollment courses in mechatronics and full-time, postsecondary training in industrial maintenance with an emphasis in automation, robotics, troubleshooting, and maintenance. Mechatronics dual enrollment courses, which include Introduction to Manufacturing, Digital Electronics, Mechatronics I, and Mechatronics II, are now offered to high school students in Clay, Jackson, Overton, Putnam, and White counties.

The LEAP grant provides equipment for labs in high schools in Putnam and White counties, as well as additional training equipment for the lab at TCAT Livingston. Labs are equipped with electrical controls, motor controls, hydraulics and pneumatics, programmable logic controls, and robotics training equipment. The equipment provides dynamic hands-on experience, spanning from the basics of manufacturing through advanced manufacturing skills. Key industry skills including problem solving, troubleshooting, and maintenance and repair are an integral part of the training.

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LEAP Funding Amount:

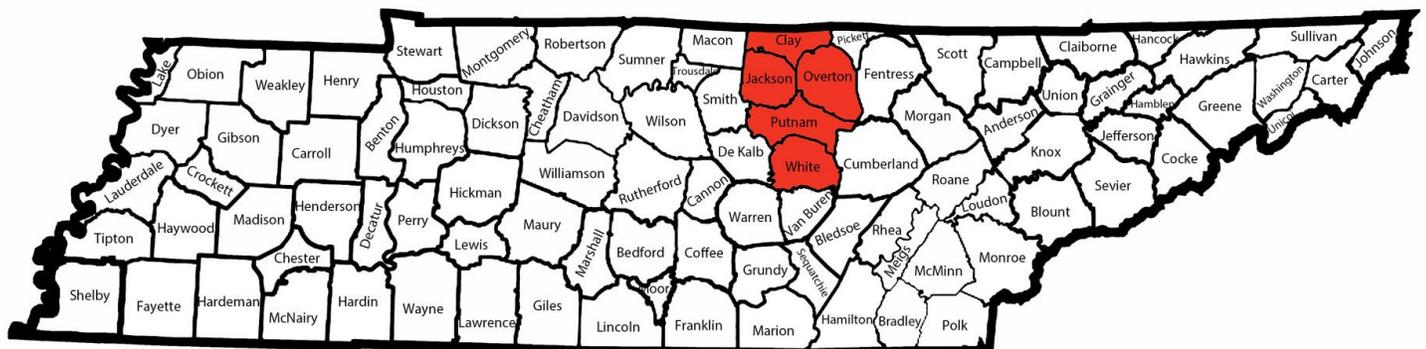
\$684,000

Project Lead:

- TCAT Livingston

Program Partners:

- The Highlands Economic Partnership Pathways to Prosperity
- Upper Cumberland Human Resource Agency
- Clay County Schools
- Jackson County Schools
- Overton County Schools
- Putnam County Schools
- White County Schools
- Overton County Chamber of Commerce
- Putnam County Chamber of Commerce
- White County Chamber of Commerce
- ATC Automation
- Bennett Industries
- Custom Tool, Inc.
- Cummins Filtration
- Tutco



Advanced Manufacturing, Industrial Maintenance, & Mechatronics in the Upper Cumberland

(continued)

The LEAP grant also funded the purchase of the Manufacturing Skills Standards Council's (MSSC) Certified Production Technician multi-media training materials for all three labs. The program consists of four modules: Safety; Quality Practices & Measurement; Manufacturing Processes & Production; and Maintenance Awareness.⁵ Students who complete the full certification program can apply this achievement toward postsecondary credit in a variety of advanced manufacturing programs, including welding, programmable logic controls, and robotics, all of which are available through this grant's postsecondary partners.

Additionally, instructors have integrated the Level I Siemens Certified Mechatronic Systems Assistant Certification for students enrolled in the full-time programs at TCAT Livingston. This certificate enables graduates to demonstrate the universal competencies necessary to fulfill basic machine operation positions in an advanced manufacturing environment.⁶



Senate Majority Leader Mark Norris (R-Collierville), sponsor of the LEAP legislation, speaks at the LEAP kickoff event in Livingston.



A student learns with the LEAP-provided mechatronics equipment at TCAT Livingston.

Program Enrollment Data*

School	Principles of Manufacturing	Introduction to Electricity	Industrial Maintenance	Total
TCAT Livingston			15	15
Clay County High School	15			15
Cookeville High School	11	29		40
Jackson County High School		15		15
Livingston Academy	17			17
White County High School	31			31
Total	74	44	15	133

* Project data provided by program partners and reflects enrollment as of December 2015.

⁵ CPT Overview. (2013). Available: [http://www.msscusa.org/wp-content/uploads/file/CPT_OVERVIEW_03_12_13\(1\).pdf](http://www.msscusa.org/wp-content/uploads/file/CPT_OVERVIEW_03_12_13(1).pdf)

⁶ Level 1 - Siemens Certified Mechatronic Systems Assistant. (2015). Available: <http://www.siemens-certifications.com/content/0/6/7/3389/43/>

Advanced Manufacturing and Workforce Center



The “Advanced Manufacturing and Workforce Center” LEAP project is the product of a regional partnership dedicated to creating dual enrollment opportunities for high school students in Anderson, Roane, and Morgan counties. The project also empowered Roane State Community College (RSCC) to build partnerships with local employers and serve incumbent workers who are seeking additional skills-training while employed full- or part-time.

RSCC has leveraged LEAP funds to open a new advanced manufacturing and workforce center in Clinton, Tennessee. This facility will enable RSCC to offer dual enrollment and full time programs to students in all three counties. The center features a new advanced manufacturing lab and new training equipment, including electrical controls, motor controls, hydraulics and pneumatics, programmable logic controls, and robotics trainers. Additional training equipment has been supplied to Oak Ridge High School to establish a lab and support dual enrollment courses.

RSCC has also leveraged LEAP funds to train instructors to integrate the Level I Siemens Certified Mechatronic Systems Assistant Certification for students enrolled at the center. This certificate enables graduates to demonstrate the universal competencies needed to fulfill basic machine operation positions in an advanced manufacturing environment.⁷

Local industry representatives have stated that prospective employees must have an in-depth understanding of the manufacturing system as a whole. This partnership is designed to expose students to all levels of manufacturing, from the most basic to the most advanced. Graduates of these programs gain key skills that allow them to interface with machining centers on production lines, solve complex problems, troubleshoot equipment issues, and complete maintenance and repair.

LEAP Funding Amount:

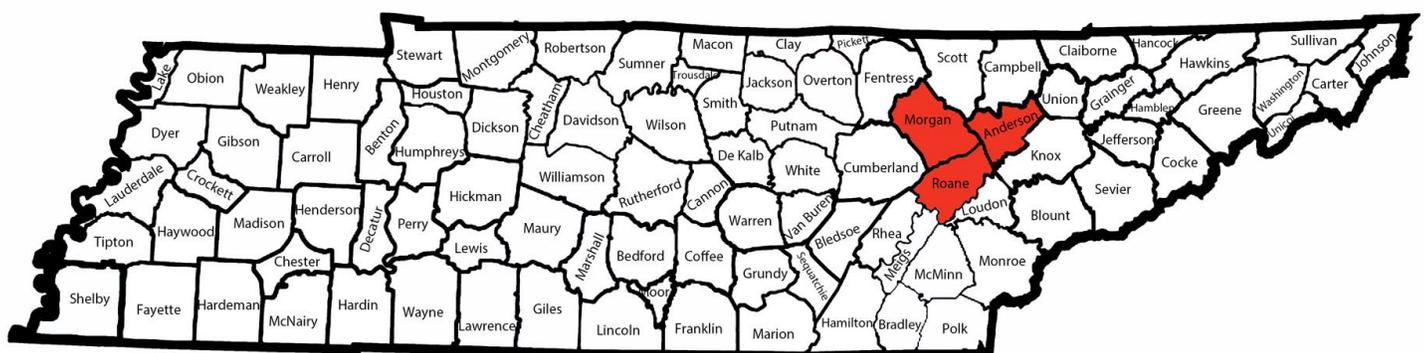
\$970,000

Project Lead:

- Roane State Community College

Program Partners:

- TCAT Harriman
- Anderson County Schools
- Morgan County Career and Technical Center
- Oak Ridge Schools
- Roane County Schools
- East Tennessee Development District
- Aisin Automotive Casting
- Capstan Tennessee (acquired by NetShape Technologies, Inc.)
- Dienamic Tooling Systems (DTS)
- SL Tennessee

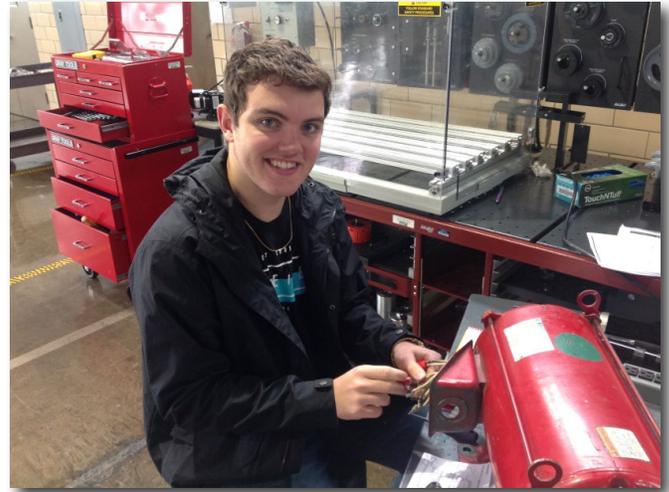


⁷ Level 1 - Siemens Certified Mechatronic Systems Assistant. (2015). Available: <http://www.siemens-certifications.com/content/0/6/7/3389/43/>

Advanced Manufacturing and Workforce Center

Student Profile

Nathan is a senior at Anderson County High School and is a member of the inaugural cohort in the Mechatronics dual enrollment program at Roane State. He is taking classes in electrical components, motors and pneumatics, and hydraulic control circuits. Nathan explained, "I love the hands-on way of learning. We get a chance to figure things out and see what does and doesn't work. This is how all our classes should be." Nathan continued, "This is something I can have a career in... I've already decided I'm going to continue with this program and get my associate degree from Roane State."



Nathan, a senior at Anderson County High School and a dual enrollment student at Roane State

Program Enrollment Data*

School	Mechatronics Dual Enrollment	AAS Mechatronics	STEM Certificate Program	Total
Anderson County High School	3			3
Clinton High School	2			2
Oak Ridge High School	16			16
Roane State Community College		11	12	23
Total	21	11	12	44

* Project data provided by program partners and reflects enrollment as of December 2015.

[LEAP] is providing the type of training and the type of motivation that we are looking for in a new associate.

-Rocky Emert, Engineering Manager, Tennessee Tool and Engineering in Oak Ridge



Closing Gaps Through Partnerships



The “Closing Gaps Through Partnerships” (CGP) LEAP project is developing a workforce pipeline in Production (Manufacturing) Pathways by providing hands-on training to high school students in seven counties throughout southern Middle Tennessee. These counties include Bedford, Franklin, Giles, Lawrence, Lewis, Marshall, and Wayne.

CGP leveraged LEAP funds to introduce training equipment, including welding simulators, mechatronics, robotics, and 3D printing, to high schools in all seven counties. All partnering high schools were required to provide coursework leading to a Certified Production Technician (CPT) certificate. CPT coursework consists of four modules: Safety; Quality Practices and Measurement; Manufacturing Processes and Production; and Maintenance Awareness.⁸ Students who complete the full certification are able to apply their training toward postsecondary credit in a variety of advanced manufacturing programs, including welding, programmable logic controls, and robotics, which are available through CGP’s postsecondary partners.

TCAT Pulaski has used this opportunity to enhance dual enrollment opportunities and strengthen articulation agreements between high schools and partnering postsecondary institutions. This includes Martin Methodist College, a centrally-located, four-year private institution and partner for the Closing the Gaps project. In addition to establishing articulation agreements, Martin Methodist has committed to support LEAP efforts by hosting “Maker Camps” on campus for middle and high school students. Students at “Maker Camps” have the opportunity to interact with a variety of advanced technologies, including 3D printing, robots, and programmable logic controls. The experience is designed to spark curiosity and drive students to pursue careers in these fields.

LEAP Funding Amount:

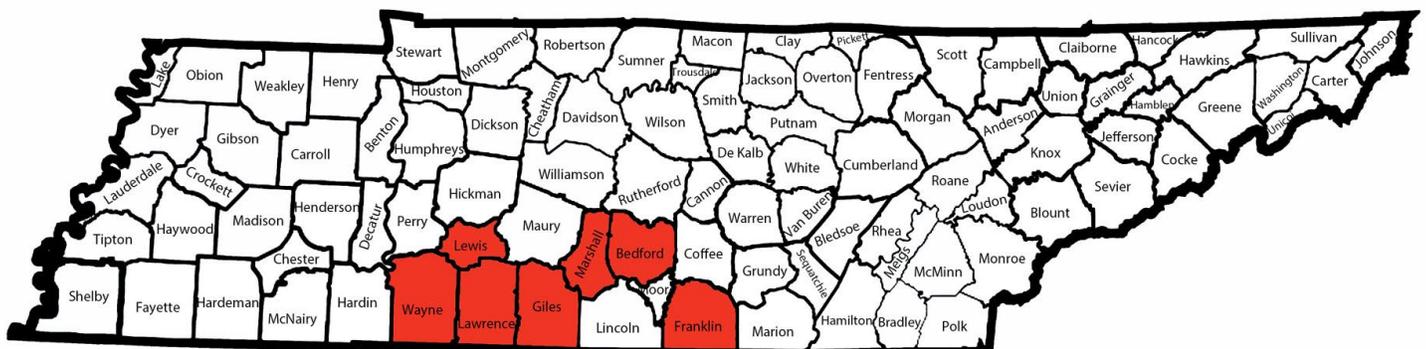
\$970,000

Project Lead:

- South Central Tennessee Workforce Alliance

Program Partners:

- Columbia State Community College
- Martin Methodist College
- TCAT Pulaski
- Gattis Leadership Group
- Bedford County Schools
- Franklin County Schools
- Giles County Schools
- Lawrence County Schools
- Lewis County Schools
- Marshall County Schools
- Wayne County Schools
- 4 MAC Machining, Inc.
- Lincoln Brass Works, Inc.
- Nissan North America
- Magneti Marelli
- Modine Manufacturing Co.



⁸ CPT Overview. (2013). Available: [http://www.msscusa.org/wp-content/uploads/file/CPT%20OVERVIEW_03_12_13\(1\).pdf](http://www.msscusa.org/wp-content/uploads/file/CPT%20OVERVIEW_03_12_13(1).pdf)

Closing Gaps Through Partnerships

Student Profile

Paige is a freshman at Marshall County High School and one of very few female students enrolled in the Introduction to Electromechanical program at the Spot Low Technology Center. After visiting Spot Low during an eighth grade field trip, she knew advanced manufacturing was the career path for her. She is excited to work on the mechanical trainer provided to the school through this LEAP grant, and, thanks to her time in this program, Paige is confident that she wants to pursue a career in mechatronics.



At right: Marshall County High School student Paige uses equipment at Spot Low Technology Center provided by the LEAP grant.

Program Enrollment Data*

School District	Welding	Machine Technology	Electro-mechanical Technology	Mechatronics	Total
Bedford County Schools	67	74			141
Franklin County Schools	41	45	23		109
Giles County Schools	26		12	11	49
Lawrence County Schools	92			40	132
Lewis County Schools	7	12	17		36
Marshall County Schools	61	14	45	24	144
Wayne County Schools	28	29			57
Total	322	174	97	75	668

* Project data provided by program partners and reflects enrollment as of September 2015.

Modine has been happy to sponsor the LEAP grant because of the potential for a new pool of candidates who will now have the appropriate skill base that manufacturers are looking for.

LEAP has provided students with an opportunity to advance their skill set with the placement of state of the art equipment in their schools making for a better trained and educated workforce.

- Mark Jent, HR Manager, Modine Manufacturing Company in Lawrenceburg



Certified Production Technician Pathway to Advanced Manufacturing



The Northwest Tennessee Workforce Board and Dyersburg State Community College (DSCC) have partnered with regional postsecondary institutions and local industry partners to reinforce pathways to advanced manufacturing careers for students across an 11-county area. The “Certified Production Technician Pathway to Advanced Manufacturing” (CPT Pathway) LEAP program utilizes industry-recognized readiness assessments, such as ACT’s National Career Readiness Certificate (NCRC), to direct students into Certified Production Technician (CPT) training courses in high schools.

This new coursework enables students in 16 high schools to master a number of core competencies related to manufacturing production at the front line. CPT coursework consists of four modules: Safety; Quality Practices and Measurement; Manufacturing Processes and Production; and Maintenance Awareness.⁹ Students who complete this coursework may apply the certification toward postsecondary credit in a variety of advanced manufacturing programs, including welding, programmable logic controls, and robotics, which are available through CPT Pathway’s postsecondary partners.

In addition to implementing this new program, LEAP funds have been used to assess the job readiness of LEAP students through ACT’s WorkKeys Jobs Skills Assessment and NCRC programs. Both of these resources provide a comprehensive procedure to measure, communicate, and improve on the common skills required for success in the workplace.

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LEAP Funding Amount:

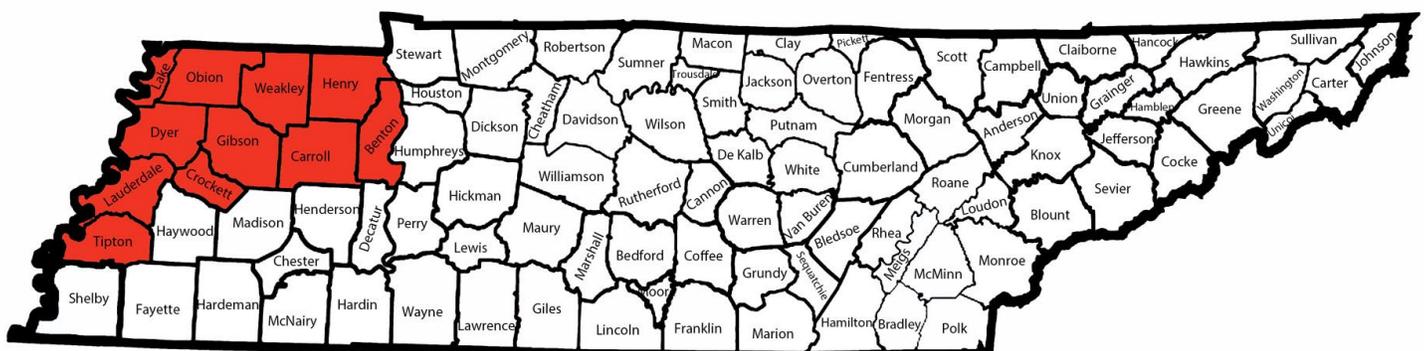
\$850,000

Project Leads:

- Dyersburg State Community College
- Northwest Tennessee Workforce Board

Program Partners:

- TCAT Covington
- TCAT Jackson
- TCAT McKenzie
- TCAT Newbern
- TCAT Paris
- TCAT Ripley
- High schools in:
 - Benton County
 - Carroll County
 - Crockett County
 - Dyer County
 - Gibson County
 - Henry County
 - Lake County
 - Lauderdale County
 - Obion County
 - Tipton County
 - Weakley County
- Caterpillar
- Ceco Door
- Unilever



⁹ CPT Overview. (2013). Available: [http://www.msscusa.org/wp-content/uploads/file/CPT%20OVERVIEW_03_12_13\(1\).pdf](http://www.msscusa.org/wp-content/uploads/file/CPT%20OVERVIEW_03_12_13(1).pdf)

Certified Production Technician Pathway to Advanced Manufacturing

(continued)

The NCRC assessment confirms a job candidate's ability to adequately perform tasks related to three fields: applying mathematical reasoning, locating information, and reading for information.¹⁰ Students wishing to enroll in CPT coursework must first complete the WorkKeys training and then achieve the Silver Level on a subsequent NCRC assessment.

In addition to this assessment, LEAP funds have been leveraged to train CTE facilitators in local high schools, provide additional instructors at DSCC and partnering TCATs, assess students upon completion of the CPT modules, and coordinate with employers to provide plant tours and job shadowing opportunities.

Program Enrollment Data*

County	School	Instructing School/Institution	Number of CPT Students
Carroll	Carroll County Career and Tech Center	Carroll County Career and Tech Center	14
Crockett	Crockett County High School (Injection Molding)	TCAT Newbern - Bells Campus	4
Crockett	Crockett County High School	TCAT Newbern	15
Dyer	Dyersburg High School	TCAT Newbern	33
Gibson	Gibson County High School	TCAT Newbern	11
Gibson	Humboldt High School	Humboldt High School	10
Gibson	Peabody High School	Dyersburg State Community College	14
Lake	Lake County High School	TCAT Newbern	3
Lauderdale	Halls High School	Dyersburg State Community College	10
Lauderdale	Ripley High School	TCAT Ripley	7
Obion	South Fulton High School	TCAT Newbern	7
Obion	Obion County Central High School	Obion County Central High School	15
Tipton	Brighton High School	Dyersburg State Community College	14
Tipton	Covington High School	TCAT Covington	2
Tipton	Munford High School	Dyersburg State Community College	5
Total			164

* Project data provided by program partners and reflects enrollment as of December 2015. Henry, Benton, and Weakley counties are initiating LEAP CPT programs in Spring 2016.

¹⁰ About the ACT NCRC®. (2015). Available: <https://www.act.org/certificate/>

Student Profile

Matthew is a junior at Gibson County High School. He commented, "I've learned a lot in the CPT class, and it helped me understand the processes at plants we toured. I was surprised that there were so many things during the tour that we talked about in class." Matthew is taking CPT classes through TCAT Newbern.



LEAP students take an industry tour at Ceco Door

Ceco is excited to see a grant offer such a program at the high school level. Laying the groundwork of industrial knowledge will go a long way in preparing the students for manufacturing careers.

-Kristy Mercer, HR Manager, Ceco Door in Milan

Filling the Gaps Between Industry and Employees with Manufacturing Technology



The “Filling the Gaps Between Industry and Employees with Manufacturing Technology” (FTG) LEAP Project has enabled the South Central Tennessee Development District (SCTDD) and TCAT Shelbyville to partner and expand industrial maintenance training in Bedford, Marshall, Franklin, and Lincoln counties. Each county has demonstrated a need for maintenance technicians with competencies in basic electricity, motors, mechanical drives, hydraulics and pneumatics, programmable logic and action controllers, and robotics. While TCAT Shelbyville has been operating an Industrial Maintenance (IM) program to address this local training need, interest in the region has been so high that TCAT Shelbyville has struggled to accommodate student demand. FTG has allowed TCAT Shelbyville to open and equip four branch facilities designed to serve an additional 80 students annually in the IM program. These four branch facilities are located in Bedford, Marshall, Lincoln, and Franklin counties.

LEAP funded electrical controls, motor controls, hydraulics and pneumatics, programmable logic controls, and robotics training equipment at each branch campus. The equipment provides dynamic hands-on experience, spanning from basic to advanced manufacturing skills. Key industry skills, including problem solving, troubleshooting, and maintenance and repair, are an integral part of the training.

Graduates from the IM program are often offered an entry-level maintenance technician position before they complete the program. Graduates may also seek additional training through an articulation agreement with Motlow State Community College and earn 30 credit hours toward an Associate of Applied Science degree in Industrial Maintenance. The opening of these four new facilities enables TCAT Shelbyville to serve these students where they live, making it easier for industry partners to engage in the classroom and provide workplace experiences to students and graduates.

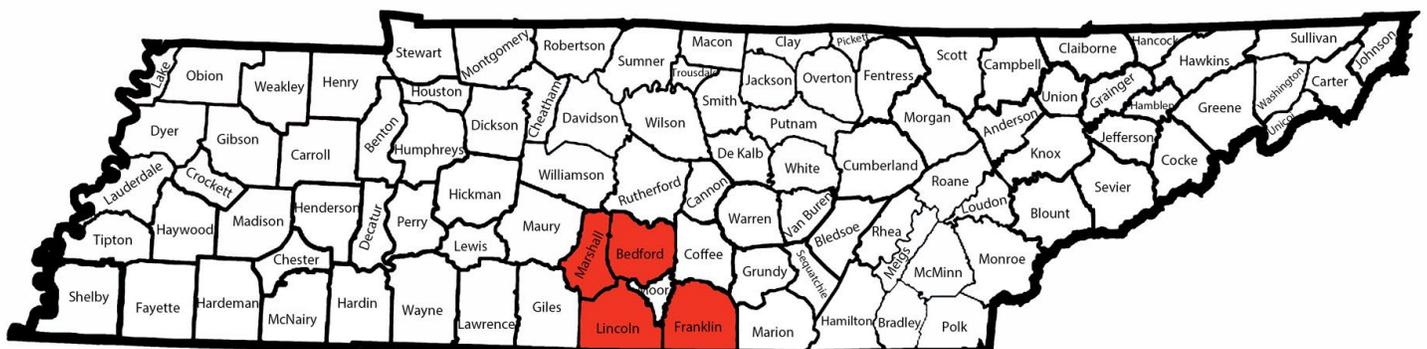
LEAP Funding Amount:
\$970,000

Project Lead:

- South Central Tennessee Development District

Program Partners:

- TCAT Shelbyville
- Bedford County Government
- City of Fayetteville Government
- Franklin County Government
- City of Lewisburg
- Lincoln County Government
- Marshall County Government
- Calsonic Kansei North America, Inc.
- Nichirin Tennessee, Inc.
- Tyson Foods, Inc.



Filling the Gaps Between Industry and Employees with Manufacturing Technology

Student Profile

Creole enrolled in the new program at the Middle Tennessee Education Center in Bedford County this fall. "I work for Jack Daniel's Distillery in the Barrel House but I would like to move up to another position with their maintenance department. Enrolling in the industrial maintenance program with TCAT Shelbyville will give me the education and the skills to do that."



Creole, a student at the Middle Tennessee Education Center in Bedford County

Program Enrollment Data*

TCAT Shelbyville LEAP Campus	Industrial Maintenance Students
Adult Education Center (Lewisburg)	14
Don Sundquist Center (Fayetteville)	19
Franklin County Business Development Center	18
Middle Tennessee Education Center (MTEC)	19
<i>Total</i>	<i>70</i>

* Project data provided by program partners and reflects enrollment as of December 2015.

LEAP will provide access to a broader base of entry level employees to enhance their skill sets and stay up to date on the latest practices in technology. Our team members will be in a better position to rapidly escalate through the ranks at Calsonic Kansei.

- Eric Huch, Chief Operating Officer, Calsonic Kansei in Shelbyville



IT Pathway Collaborative



The "IT Pathway Collaborative" LEAP project created a regional partnership that addresses the information technology skills gap in Middle Tennessee. This partnership promotes IT career opportunities in Davidson, Sumner, and Williamson counties. While demand for IT professionals has remained high in these three counties, postsecondary institutions have historically struggled to fill classroom spaces with students interested in pursuing related professional fields. The IT Pathway Collaborative aims to encourage students to pursue IT-related professions.

The IT Pathway Collaborative seeks to enhance and increase enrollment in current IT academic programs through employer engagement, corporate involvement, and K-12 programming. Programming to support these pathways includes initiating dedicated IT career fairs in middle and high schools and instituting before and after school programming, such as coding camps, pre- and post-school computer clubs, and job-shadowing field trips. In addition to these programs, the IT Pathway Collaborative has tapped volunteers from partnered employers to provide professional development opportunities to students through classroom visits and internship opportunities.

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LEAP Funding Amount:

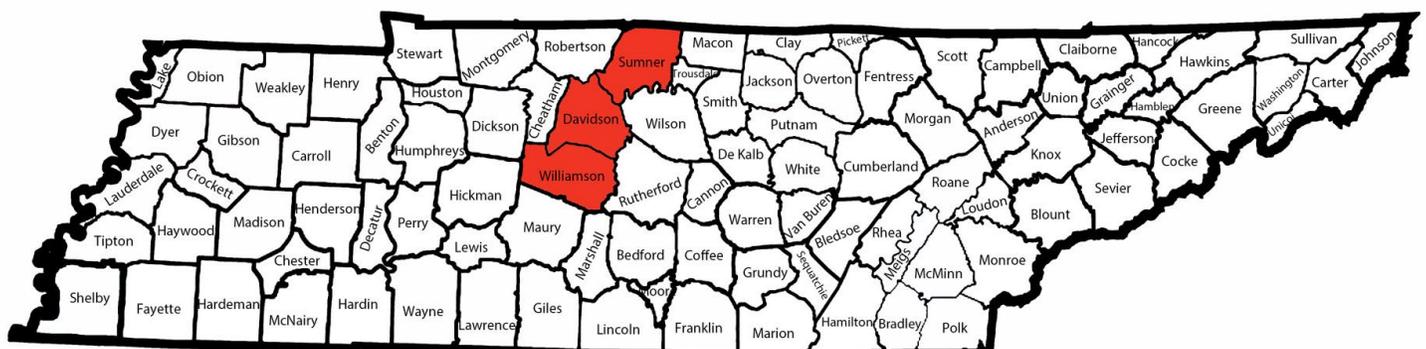
\$850,000

Project Lead:

- Nashville Technology Council

Program Partners:

- Columbia State Community College
- Nashville State Community College
- Volunteer State Community College
- Metro Nashville Public Schools
- Williamson County Schools
- BNY Mellon
- Bridgestone Americas, Inc.
- c3/consulting
- CapTech
- Change Healthcare
- Community Health Systems, Inc.
- Dave Ramsey's Lampo Group
- Dell, Inc.
- Emerge Financial Wellness
- Emma
- FDM Group
- Firefly Logic
- ForceX, Inc.
- Griffin Technology, Inc.
- Homeland, LLC
- Hospital Corporation of America (HCA)
- Kelly IT Resources
- Mike Collins & Associates, Inc.
- Nissan North America
- Network Solutions Group, Inc.
- Perception Health LLC
- Permanent General Companies, Inc.
- Qualifacts Systems Inc.
- ServPro Industries, Inc.
- TechnologyAdvice
- Teknetex
- WPC Healthcare



IT Pathway Collaborative

(continued)

Increased engagement from IT professionals will be facilitated and supported through a new online platform, www.webuildtech.com. This website will enable educators and employers to promote IT careers and pathways and allow students to explore career paths within the IT field by viewing interviews with real professionals, seeking out educational resources related to these career paths, and applying for jobs, internships, and mentorship opportunities.

The website has been opened to regional employers to populate job and internship requirements, upload career advisor information, and enroll in volunteer programs. The We Build Tech website will be fully operational and marketed to students in Spring 2016.



*Program Participation Data**

IT Pathway Activities	Students Participating
Career Fair Participants**	11,600
Code Camp Participants	123
Computer Club Participants	412
Job Shadow Participants	47
Student Interns	8
Total	12,190

* Project data provided by program partners and reflects enrollment as of December 2015.

** Career fair participants are comprised of middle school and high school students who attended fairs hosted as part of the LEAP program.



We Build Tech website

LEAP Memphis



The Greater Memphis Alliance for a Competitive Workforce (GMACW) is the result of an 18-month collaboration between the Brookings Institution, FedEx, City of Memphis Mayor AC Wharton, and Shelby County Mayor Mark Luttrell. LEAP Memphis empowered GMACW to build new partnerships between educational resources and manufacturing, transportation, distribution, and logistics industries throughout Greater Memphis. GMACW facilitated these new partnerships by aligning training and education programs with employers' skill requirements, connecting employers to cost-effective training and hiring support, and improving business service operations for workforce development among training/education providers that serve job candidates throughout the region.

To support these activities, LEAP Memphis will conduct an extensive survey of employers at the beginning of 2016 to identify skill requirements for industries in the Greater Memphis region. Survey responses will also be used to establish a database to inform educators and employers throughout the region of current and projected workforce demands by occupation. This database will be housed in a new online platform designed to deliver regional workforce content to Tennesseans in the LEAP Memphis service area. This platform, which is still under development, will produce workforce trends, provide information about local employer demand, organize and analyze results by occupation and required skills, and offer industry-sector specific career information, including direct service provider referrals.

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LEAP Funding Amount:

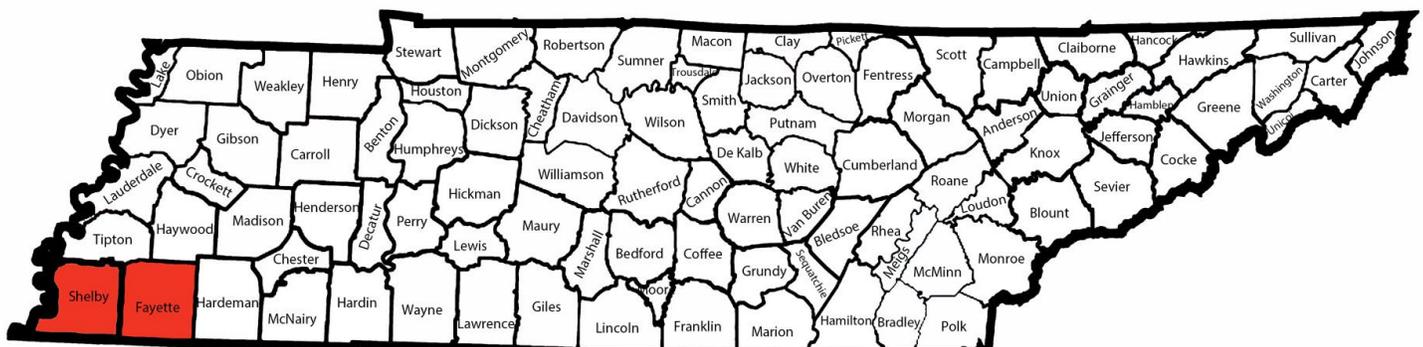
\$743,500

Project Lead:

- Greater Memphis Alliance for a Competitive Workforce

Program Partners:

- Southwest Tennessee Community College
- Shelby County Schools
- Bartlett Chamber of Commerce
- Greater Memphis Chamber
- The Greater Memphis Chamber's Manufacturing and Logistics Councils
- Greater Memphis Medical Device Council
- FedEx
- Nike, Inc.



LEAP Memphis

(continued)

Through LEAP Memphis, GMACW has developed a strategic partnership with local schools and training centers to embed a customized Career Readiness Training (CRT) program. The CRT program trains faculty throughout the region to integrate career readiness curriculum into a course of study. In Fall 2016, GMACW trained 10 high school instructors to lead a pilot CRT program in 5 regional institutions. This pilot program will help to develop a framework for an extensive regional rollout of the CRT curriculum. Formal dual enrollment arrangements with all regional postsecondary institutions are still being finalized; however, students completing the CRT pilot will be eligible to earn credits via a prior learning assessment. The ACT's National Career Readiness Certificate (NCRC) assessment has also been incorporated into the program. The NCRC provides a comprehensive procedure to measure, communicate, and improve on the common skills required for success in the workplace.¹¹ The assessment is utilized by industry to explore a job candidate's ability to perform tasks, such as reading for information, applying mathematical reasoning, and locating information.¹²

*Program Enrollment Data**

CRT Pilot Schools	CRT Students
Whitehaven High School	85
Southwest Career & Technology Center	23
Kingsbury Career & Technology Center	70
Trezevant Career & Technology Center	50
Cordova High School	15
Total	243

* Project data provided by program partners and reflects enrollment as of December 2015.

¹¹ About the ACT NCRC®. (2015). Available: <https://www.act.org/certificate/>

¹² Ibid.



LEAP to Success

The “LEAP to Success” project is led by Jackson State Community College in partnership with TCATs in Crump, Jackson, McKenzie, Paris, and Whiteville. The program is developing a career pathway from education programs to occupations in production, maintenance and repair, and construction throughout Carroll, Chester, Crockett, Decatur, Gibson, Hardeman, Hardin, Haywood, Henderson, Henry, Madison, and McNairy counties.

The LEAP to Success project provides new opportunities that allow full-time students to work toward an Associate of Applied Science in Industrial Technology, as well as a number of technical certificates, including Production Automation, Welding, and Machine Tool. In addition to these new full-time offerings, LEAP to Success is also initiating dual enrollment Certified Production Technician programs in three regional high schools. The CPT program consists of four modules: Safety; Quality Practices and Measurement; Manufacturing Processes and Production; and Maintenance Awareness.¹³ Students who complete the full certification are able to apply their training toward postsecondary credit in a variety of advanced manufacturing programs available at LEAP to Success partnered institutions.

(continued on following page)

LEAP Funding Amount:

\$900,000

Project Lead:

- Jackson State Community College

Program Partners:

- TCAT Crump
- TCAT Jackson
- TCAT McKenzie
- TCAT Paris
- TCAT Whiteville
- University of Memphis
- Jackson Regional Partnership
- Southwest Tennessee Development District
- Jackson-Madison County Schools
- Jackson Chamber of Commerce
- American Access Inc.
- Armstrong Hardwood Flooring Company
- Bodine Aluminum Tennessee
- Caterpillar
- Design Team Sign Company, LLC
- Duro Standard Products Company
- Gerdau Ameristeel
- John W. McDougall Company, Inc.
- LASCO Fittings, Inc.
- Manpower
- Metal Technologies
- MTD Products Inc.
- Mustang Fabricating
- Stanley Black & Decker
- TBDN Tennessee Company
- Toyota Boshoku/ARJ Manufacturing, LLC
- UGN, Inc.
- United Association



¹³ CPT Overview. (2013). Available: [http://www.msscusa.org/wp-content/uploads/file/CPT%20OVERVIEW_03_12_13\(1\).pdf](http://www.msscusa.org/wp-content/uploads/file/CPT%20OVERVIEW_03_12_13(1).pdf)

LEAP to Success

(continued)

LEAP to Success provides a clear pathway for students to enroll in two- or four-year colleges or universities. Jackson State Community College has established new articulation agreements with partnered TCATs and the University of Memphis to create pathways for students to enroll in Jackson State's Associate of Applied Science in Industrial Technology program and go on to enroll in the Bachelor of Science in Engineering Technology program through the University of Memphis. To support this transition and strengthen collaboration between Jackson State and the University of Memphis, a joint faculty position was created.

Jackson State also used LEAP funds to renovate its lab space to accommodate new industry standards, train faculty, and add new online curricula for industry-requested Advanced Maintenance Technician (AMT) training. LEAP funds were also used to purchase additional equipment, including a FANUC robot and education training package, welding training units, a computer numerically controlled (CNC) trainer, and an electromechanical training system.

Program Enrollment Data*

School	Certified Production Associate Dual Enrollment	Production Automation Program	Welding Technology Diploma	CNC Programmer & Machine Tool Technology	A.S. Industrial Technology	Total
Jackson State Community College					39	39
TCAT McKenzie		14				14
TCAT Crump				14		14
TCAT Jackson	2		116			118
TCAT Paris			42			42
TCAT Whiteville			46			46
Lexington High School	17					17
Decatur County High School	58					58
Chester County High School	19					19
Total	96	14	204	14	39	367

* Project data provided by program partners and reflects enrollment as of December 2015.

MAD About Technology: Mobile Applications Development and Innovative Technologies



The “MAD About Technology: Mobile Applications Development and Innovative Technologies” LEAP project empowered the South Central Tennessee Workforce Alliance (SCTWA) and Columbia State Community College to initiate a new Mobile Application Development (MAD) program in Lawrence, Maury, and Williamson counties. Many regional employers, including medical centers and technology groups, have indicated that mobile technology is essential for their operations. The demand for students trained in application software development is expected to increase by 36 percent between 2013 and 2023.¹⁴

The MAD program, housed at Columbia State as part of the application development concentration within the Information Systems Technology (IST) Associate of Applied Science program, is the only academic program of its kind in the state. Students enrolled in MAD will be trained in Android, iOS, and Windows through nine requirements: an initial mobile programming course, five application development courses, one networking course, an advanced programming course, and an internship capstone. Industry surveys completed by Columbia State indicate that the skills taught in this program will be in high demand.

LEAP grant funding has been used to train faculty and outfit the program’s state-of-the-art mobile application development labs, including 18 mobile application trainers and 24 high capacity computers. With MAD courses embedded in Columbia State’s IST program, several prerequisites including basic IST introductory courses must be completed by students before full MAD coursework can commence. 14 students will enroll in MAD courses in Spring 2016.

LEAP Funding Amount:
\$135,918

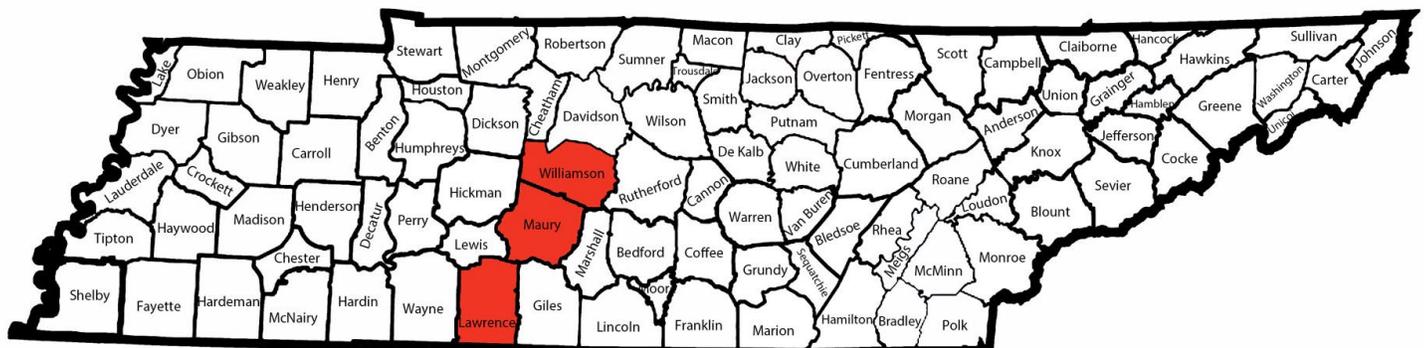
Project Lead:
• Columbia State Community College

Program Partners:

- Lawrence County Schools
- Maury County Schools
- Williamson County Schools
- South Central Tennessee Workforce Alliance
- Homeland, LLC
- Lawrenceburg Utility Systems
- neXperia
- WireMasters, Inc.

The skills and knowledge Columbia State’s Mobile Application Development students gain are an excellent fit for our internship needs.

-Jeff Crawford, Director of the Systems Innovation Group, Jackson National Life Insurance Company in Franklin



¹⁴Williamson, Inc. (2014). “Outlook Williamson Inaugural Trends Report.” Williamson County Chamber of Commerce.

Manufacturing and Mechatronics for Soldiers and Students (M2S2)



The “Manufacturing and Mechatronics for Soldiers and Students” (M2S2) LEAP project has allowed the North Tennessee Workforce Board (NTWB) and Workforce Essentials, Inc. to partner with Nashville State Community College and TCAT Dickson to establish pathways in advanced manufacturing in Cheatham, Dickson, and Montgomery counties. M2S2 strengthens these pathways by providing dual enrollment opportunities to Kenwood and Creek Wood high schools, establishing a new Advanced Manufacturing Campus (AMC) adjacent to the Dickson County Career Center, and launching a new mechatronics program on base at Fort Campbell.

M2S2 has leveraged LEAP funds to hire and train faculty and to renovate laboratory space in the AMC in Dickson. M2S2 has also purchased the following equipment for classrooms at Fort Campbell, the AMC, and in partnered high schools: a complete system of mechanical, pneumatics, and programmable logic control technology; handling technology; and electrical, robotics, and hydraulics trainers.

Dual enrollment students at Kenwood and Creek Wood high schools are eligible to earn postsecondary credit during all four years of high school. Freshmen and sophomores may enroll in Principles of Manufacturing and/or a welding course, while juniors and seniors receive training in Mechatronics I and Digital Electronics. All courses build toward a full mechatronics technical certificate.

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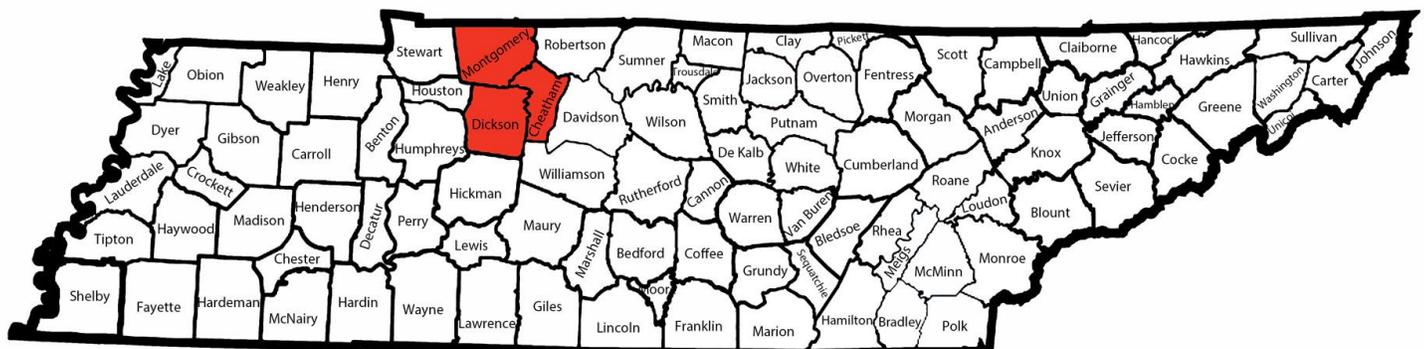
LEAP Funding Amount:
\$992,037

Project Leads:

- Nashville State Community College
- North Tennessee Workforce Board

Program Partners:

- Austin Peay State University
- TCAT Dickson
- Clarksville-Montgomery County Schools
- Dickson County Schools
- Clarksville-Montgomery County Economic Development Council
- Workforce Essentials, Inc.
- Cheatham County Government
- Dickson County Government
- Montgomery County Government
- Bridgestone Metalpha USA Inc.
- A.O. Smith
- Dal-Tile
- Hankook Tire Tennessee
- Fort Campbell 101st Airborne Division



Manufacturing and Mechatronics for Soldiers and Students (M2S2)

(continued)

M2S2 has also integrated the Level I Siemens Certified Mechatronic Systems Assistant Certification for transitioning veterans and full-time students enrolled in programs at Fort Campbell and the AMC. This certificate enables graduates to demonstrate the universal competencies necessary to fulfill basic machine operation positions in an advanced manufacturing environment.¹⁵ The first cohort of students in the Mechatronics certificate program at Fort Campbell graduated in December 2015; the graduation rate for this first cohort was 96.7 percent.

Graduating students from the dual enrollment program, Ft. Campbell, or the AMC will be eligible to begin coursework in Nashville State's Associate of Applied Science in Mechatronics program should they wish to continue their training. Each of these programs combines training in mechanical, electronic, electrical, and computer science to provide students with the skills necessary to work as a technician in a multidisciplinary industrial environment.



Michael, a Mechatronics student at TCAT Dickson

Student Profile

Michael is a veteran of the US Navy: "I enrolled in the Mechatronics program at TCAT Dickson so that I could gain the knowledge to provide a better standard of living for my wife and daughter as well as to receive the necessary training to go further in a new career. With my certifications and diploma from TCAT Dickson, I hope to take my first steps toward achieving my associate degree in Mechanical and Electrical Engineering."

Program Enrollment Data*

School	Principles of Manufacturing	Welding	Digital Electronics	Mechatronics I	Total
Creek Wood High School	46	26			72
Fort Campbell				29	29
Kenwood High School				22	22
TCAT Dickson		35		19	54
Total	46	61		70	177

* Project data provided by program partners and reflects enrollment as of December 2015.

¹⁵ Level 1 - Siemens Certified Mechatronic Systems Assistant. (2015). Available: <http://www.siemens-certifications.com/content/0/6/7/3389/43/>

Regional Apprenticeship Preparedness Program (RAPP)



The “Regional Apprenticeship Preparedness Program” (RAPP) LEAP project has allowed the Southeast Tennessee Development District (STDD), TCAT Athens, and Cleveland State Community College to begin to recruit, train, and sustain a skilled advanced manufacturing workforce in Southeast Tennessee. The grant has introduced dual enrollment and dual credit courses in seven high schools across Bradley, McMinn, Meigs, and Polk counties. The courses allow students to learn about mechanical and electrical processes and develop the skills necessary to succeed in the modern manufacturing workplace.

RAPP used LEAP funds to purchase training equipment for each high school, including electrical controls, motor controls, hydraulics and pneumatics, programmable logic controls, and robotics training equipment. The equipment provides hands-on training opportunities, spanning from the basics of manufacturing through advanced manufacturing skills. Key industry skills including problem solving, troubleshooting, and maintenance and repair are an integral part of the training.

To receive this training equipment, STDD required all seven partner high schools to integrate the full manufacturing academic cluster into their curricula. This cluster, sponsored by the federal Pathways to Prosperity initiative, includes the following courses: Principles of Manufacturing, Digital Electronics, Mechatronics I, and Mechatronics II. These courses strengthened the region’s workforce by providing students with the opportunity to earn postsecondary credits leading to a credential and by directing students toward high-demand, advanced manufacturing jobs.

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LEAP Funding Amount:
\$946,280

Project Lead:
• Southeast Tennessee Development District

Program Partners:

- Cleveland State Community College
- TCAT Athens
- Bradley County Schools
- McMinn County Schools
- Meigs County Schools
- Polk County Schools
- Cormetech, Inc.
- DENSO Manufacturing Tennessee, Inc.
- E&E Manufacturing of Tennessee Inc.
- Gestamp
- Heil Trailer International
- Jackson Furniture Industries
- Mars Chocolate North America, LLC



Regional Apprenticeship Preparedness Program (RAPP)

(continued)

RAPP also seeks to remove the historically negative stigma often associated with manufacturing and CTE coursework through a social media marketing campaign, #MechaRAPP. The student-created social media plan includes social media activities and contests designed to dispel negative stereotypes surrounding advanced manufacturing and to increase awareness about new training opportunities that lead to careers in the field. The RAPP social media campaign will launch in high schools and communities in Spring 2016. The RAPP team will also expand industry engagement with students through classroom presentations, demonstrations, plant tours, and opportunities for apprenticeships after graduation.

Program Enrollment Data*

School	Principles of Manufacturing	Mechatronics I	Digital Electronics	Mechatronics II	Total
Bradley Central High School	30		15		45
Cleveland High School				61	61
Meigs County High School	18	22			40
McMinn County High School		13		12	25
McMinn Central High School	16	15			31
Polk County High School		17			17
Walker Valley High School	71				71
Total	135	67	15	73	290

* Project data provided by program partners and reflects enrollment as of December 2015.

Student Profile

Summer is a senior at Polk County High School and is the only female student enrolled in her Mechatronics I class. When asked why she chose Mechatronics, she said, "I really want to be an engineer, either mechanical or robotics. I chose this course in order to be better prepared for college, and because it was something new and seemed very interesting. I have really enjoyed the class so far."



Summer, a Polk County High School student studying Mechatronics

We are excited about the new Mechatronics program in the high schools because it is teaching students both the soft skills and electromechanical skills that are needed to succeed in our industry. Manufacturing is experiencing a growing shortage in skilled workers in the electromechanical field. It is strategically advantageous for the industry to begin addressing this need at the high school level.

Students who successfully complete this program and go on to complete their training at the TCAT or CSCC will have the necessary skills needed to compete for a spot in the manufacturing industry.



-Jimmy Renner, Maintenance Technical Training Coordinator, Mars Chocolate North America in Cleveland

Strengthening the Lakeway Links: Providing a Demand Driven Workforce Supply Chain



The “Strengthening the Lakeway Links: Providing a Demand Driven Workforce Supply Chain” (STLL) LEAP project is the product of a three-year dialogue between local partnerships of regional industry leaders, economic development leaders, Walters State Community College, TCAT Morristown, and K-12 districts. The STLL project aims to produce a clear vision for the specific skills gaps that need to be addressed throughout Hawkins, Hamblen, and Grainger counties. STLL aims to strengthen technical skills in electricity and industrial maintenance, as well as “soft skills,” including attendance, problem solving, math and reading skills, and the avoidance of substance abuse.

STLL is addressing these challenges by providing dual enrollment courses in industrial electricity and electromechanical engineering through TCAT Morristown and Walters State Community College to five regional high schools. In addition to these new dual enrollment programs, STLL has integrated ACT’s WorkKeys Jobs Skills Assessment and National Career Readiness Certificate (NCRC) program into high schools to assess the job readiness of LEAP students. Both WorkKeys and the NCRC have been developed by ACT to provide a comprehensive procedure to measure, communicate, and improve on the common skills required for success in the workplace.¹⁶ The NCRC assessment is utilized by industry to explore a job candidate’s ability to perform tasks such as reading for information, applying mathematical reasoning, and locating information.¹⁷

The Lakeway region has often struggled to meet the demands of many students who wish to enroll in advanced manufacturing courses at TCAT Morristown or Walters State Community College. STLL intends to leverage these dual enrollment opportunities to increase capacity at both institutions and bolster the supply of qualified workers in the region.

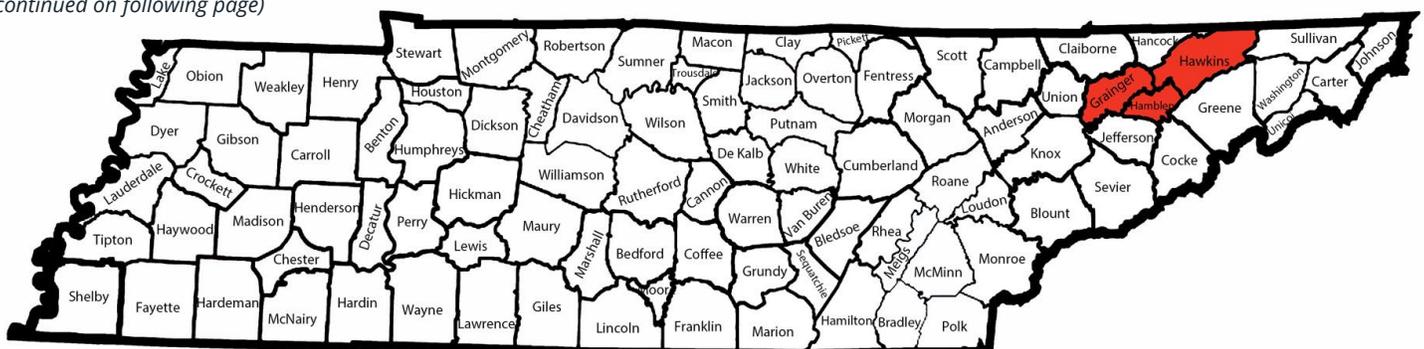
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LEAP Funding Amount:
\$988,000

Project Lead:
• TCAT Morristown

Program Partners:

- Walters State Community College
- Hamblen County Schools
- Hawkins County Schools
- Grainger County Schools
- Smoky Mountains Area Workforce Board
- Alcoa Howmet
- Colortech Inc.
- Kawasaki Tennessee
- MAHLE Inc.
- Team Technologies Inc.
- Tuff Torq Corporation



¹⁶ About the ACT NCRC®. (2015). Available: <https://www.act.org/certificate/>

¹⁷ Ibid

Strengthening the Lakeway Links: Providing a Demand Driven Workforce Supply Chain

(continued)

LEAP funds enabled STLL to triple TCAT Morristown's ability to serve working adults by establishing an additional site for industrial maintenance instruction. This additional site allows workers from STLL's service area to quickly master programmable logic controls, robotics, and automation skills, as well as access to general industrial maintenance instruction.

The STLL project has also committed to tackle gaps in soft skills among students and employees. High school students will have the opportunity to complete STLL's Work Ethic Diploma, showcasing their commitment to punctuality, workplace behavior, and adherence to a drug-free work environment. As of Fall 2015, 930 seniors have already begun to work toward completing the Work Ethic Diploma. Students who earn the diploma will graduate with distinction and be guaranteed an interview with partnered regional employers.

Program Enrollment Data*

School District	Industrial Electricity	Industrial Maintenance	Electricity	Machine Tool	Total
TCAT Morristown	60	94		14	168
Grainger High School			40		40
Washburn School			5		5
Cherokee High School			37		37
Volunteer High School			13		13
Morristown-Hamblen High School East			17		17
Morristown-Hamblen High School West			28		28
Total	60	94	140	14	308

* Project data provided by program partners and reflects enrollment as of December 2015.

Student Profile

Wyatt once assisted his father in swapping engines in a 1990 Ford F150 truck and immediately wanted to learn more about how machines work. Sparked by this interest, Wyatt jumped at the opportunity to complete a summer internship with MAHLE, a local manufacturer. There, he learned about automated production, the importance of quality, and how a modern advanced manufacturing facility operates. He attained a vast amount of knowledge in working with the facilities maintenance department. Wyatt excelled during the internship and was offered a part-time position at MAHLE at the end of the summer. After completing high school, Wyatt plans to enroll in the Industrial Maintenance program at TCAT Morristown in Fall 2016.

Wyatt, a high school student interning at MAHLE in Morristown



We, along with the rest of the industries in town, have tried to identify opportunities where we can work with the education system to start to enlighten the students on what manufacturing is today. It's different from what it was 20 years ago.

Manufacturing is now highly automated, highly skilled, and requires different aptitude. I think the kids will absolutely have a different idea of what manufacturing is from their participation.

-Jim Sexton, Plant Manager, MAHLE Engine Components in Morristown



VI. Legislative Recommendations

To ensure Tennessee's continued economic success, the process of strategically aligning workforce needs with dedicated academic programs and educational access initiatives should become a standard practice across our communities. The parameters of the LEAP program provide this alignment across both the local and state agency levels.

While the partnerships and alignment initiatives created by LEAP will certainly continue to play a critical role in the success of LEAP communities well after the culmination of the grant period, it is advantageous to build upon the established foundation and continue to provide the resources that will enable these alignment processes to flourish.

LEAP programs have experienced success and support from employers in a short time due to the unique structure of the grant. It requires educators, employers, and regional economic development professionals to coordinate to meet the need for trained job candidates. To build upon the program's successes, THEC recommends the continued implementation of the LEAP program and the examination of the following options:

1. Sustainability – Minimal Costs/Expenses

Appropriation of funds for projects to continue to meet program objectives will enable the possibility for expansion of student capacity at current locations. While an initial appropriation funded the start-up and development of these programs, relatively minimal expenses to sustain programmatic efforts, such as instructor salaries, equipment maintenance, and administrative costs, may be necessary.

2. Expansion of the LEAP Program to Unserved Areas

Expanding LEAP program availability to currently unserved regions would benefit additional workforce sectors and is a high priority. While the academic programs LEAP has already initiated are linked to workforce pipelines with sizable demonstrations of need throughout our state's communities, these programs represent just a portion of the total needs for workforce and educational alignment across our state.¹⁸ With only 12 projects selected from a pool of 27 original applicants, the demand for expansion into other state geographic regions remains substantial.

Additional funds that enable new communities to align educational and training resources to meet the needs of new employers and work sectors would provide the opportunity for Tennessee to sharpen and maintain its competitive edge in the nation's labor market.

¹⁸Tennessee Higher Education Commission. (2015). Academic Supply and Occupational Demand in Tennessee: Workforce Needs and Degree Production. Available: www.tn.gov/thec/topic/legislative-reports

3. Examine opportunities for Work-based Learning and Internships

One of the most powerful tools in the LEAP program is work-based learning. Work-based learning experiences have been well documented for their positive impact in the formation of a student's professional aspirations.¹⁹ Currently, several LEAP projects have integrated student work-based experiences to meet the local match requirement for the grant; however, opportunities exist to expand these programs to increase capacity and employer engagement within all current LEAP projects. Supplementary funds incentivizing LEAP industry partners to initiate and promote paid internships in their region would allow for this expansion.

¹⁹United States Department of Labor. (2015). Career Preparation and Work-Based Learning Experiences. Available: <http://www.dol.gov/odep/categories/youth/career.htm>