



EAGLE Pathways:
Bridging the Middle Skills Gap
to Careers in Aviation

2019

A large commercial airplane is shown from a low angle, flying over a runway at dusk or dawn. The scene is dimly lit with a blue tint. The runway lights and navigation equipment are visible in the foreground and middle ground.

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Executive Summary

The aviation industry's workforce shortage has the potential to constrain companies' future growth, even as demand for air travel soars at unprecedented heights. From pilots to FAA-certificated aircraft mechanics and repairmen to uncertificated aircraft technicians, critical segments of the aviation workforce are retiring faster than new talent is being recruited and upskilled for thousands of open positions.

The talent shortage is acute for aircraft maintenance professionals, men and women with the mission-critical middle skills and the real-world job experience the industry counts on to keep planes in the air and passengers safe. In a survey of CEOs from aerospace and defense (A&D) companies by Aviation Week, 75 percent of respondents said they are concerned about the availability of key skills. The pipeline of talent flowing into the MRO (maintenance, repair and overhaul), where aircraft maintenance technicians (AMTs) require specialized training but not a four-year college degree, is in short supply. An independent study estimates 189,000 new aircraft technicians will be needed through 2037 to power North America's aircraft repair market and more than 750,000 worldwide.¹ The short supply is already alarming for aircraft mechanics and sheet metal technicians and other production-related jobs inside the MRO. Forecasters predict demand for maintenance workers could outstrip supply by 2022.²

AAR, a global aviation services company specializing in aircraft MRO, supply chain and expeditionary services for government customers, has more than 400 open positions at its five MRO facilities in the U.S., and two repair stations in Canada. Aviation companies like AAR are confronting workforce challenges on several fronts and sharing best practices should be encouraged by industry leaders worldwide. For its part, AAR is expanding existing partnerships with schools and forging new ones to heighten awareness of aviation careers. We've joined our industry peers to advocate for legislative and policy initiatives to modernize the government's training requirements. We've launched a new program that creates clear career pathways to advancement, without incurring college debt. And we're focusing recruitment efforts on military veterans and historically underrepresented groups, many of them among the 6.5 million discouraged Americans who are neither in school nor in the workforce.⁴

When AAR last examined the middle skills talent shortage in its 2011 report, "The Mid-Skills Gap in Middle America: Building Today's Workforce," STEM education initiatives were burgeoning across the country. But lack of awareness of aviation careers and negative perceptions about hands-on skilled labor made recruitment challenging. Since then, there has been a growing shift in thinking among education and advocacy groups to promote and even encourage young people to consider careers that require industry certification but not necessarily a four-year degree. This shift, however, isn't happening fast enough. Next generation aircraft that require advanced technical skills are coming into service. Parting out of legacy aircraft and engines will provide



¹ Boeing Company, *20-year Pilot and Technician Outlook Study*.

² Oliver Wyman's CAVOK division research insights "Aviation Growth Is Outpacing Labor Capacity," 2017.

³ Ibid.

⁴ U.S. Bureau of Labor Statistics

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business opportunities for aftermarket companies like AAR for years to come. Lightweight composites are the material of choice, but Federal Aviation Administration (FAA) Part 147 training protocols to become a certified aircraft mechanic remain out-of-date.

While none of this is news to A&D companies, today there is a broader imperative for industry leaders to educate future workers and the individuals and institutions tasked with advising youth, military veterans and workers with companion skills about their career options. Middle-skill jobs requiring a two-year associate's degree or industry certification account for 53 percent of the United States' labor market, but only 43 percent of



the country's workers are trained to the middle-skill level, according to the National Skills Coalition. Baby Boomers who once made up the bulk of the aviation industry's AMTs are nearing retirement (30%), and 27% are age 64 or older.⁵ New workers represent just 2%.⁶ The U.S. Bureau of Labor Statistics (BLS) projects the job market for aircraft and avionics equipment mechanics and technicians will grow by 5% between 2016 and 2026. But due to the mismatch in the way the government categorizes aviation maintenance jobs, that number could be higher.

Further challenged to recruit at a time of low unemployment, 3.9% nationally (Dec. 2018), where will the aviation workforce come from?

A portion must be recruited from the 6.5 million working-age Americans who have given up hope of finding jobs. Others should be from among middle, high school and college-age students who favor a less expensive two-year associate's degree, or industry skills certifications to build a pathway to a

good-paying job, over the high tuition and crushing debt that can accompany a four-year degree. Women could comprise another group of future workers if the industry would extend its outreach to them. While the percentage of female FAA-certified airframe and powerplant (A&P) mechanics is increasing, it remains low, at 2.4%.⁷ And, historically, representation by ethnic and racial minorities has been lacking, along with the demographic data necessary to track progress. It will be hard for these groups to miss the industry's story of immediately available jobs in a growing field that offers job training and, in some cases, tuition reimbursement.

At AAR, we submit that closing the middle-skills gap can restore a path to prosperity for many Americans while refueling small and midsize companies. But industry must lead by continuing to spark conversations and encourage public-private partnerships. AAR is introducing its new EAGLE Career Pathway program at colleges and universities in the Midwest including in Indianapolis (Vincennes University); Chicago (City Colleges of Chicago, Olive-Harvey); Duluth, Minn. (Lake Superior Colleges); Rockford, Ill. (Rock Valley College), and Kalamazoo, Mich. (Western Michigan University). Coursework will begin in the spring.

At Olive-Harvey College in Chicago, a new aviation sheet metal curriculum and training developed by AAR will be offered at the new Aviation Futures Training Center, a 12,000-square-foot facility located about a mile from the campus. In Phase I, students who complete the 300-hour sheet metal course will earn a portable industry

⁵ Aviation Technician Education Council (ATEC) 2018 Pipeline Report

⁶ Ibid.

⁷ Ibid.

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certification to either gain entry-level employment in aviation, or a companion industry. They can elect to continue their education and enroll in Phase II, a composites course to be introduced in 2020, and then, if they choose, Phase III, aviation electronics, to be offered in 2021. This will allow students to earn stackable credentials, navigating their way to several career tracks that include management jobs.

In Indianapolis, AAR's new EAGLE Career Pathway program marks an expansion of the company's relationship with longtime education and training partner Vincennes University. Students who pursue their A&P mechanics certificate are now eligible for up to \$15,000 in tuition reimbursements. They will also gain access to unique job experiences inside AAR's state-of-the-art MRO facility, the Indianapolis Maintenance Center (IMC) located at the airport, as well as mentoring and academic support and monitoring. This tuition reimbursement is available to all EAGLE Pathway partner schools.



AAR has developed and supported programming and events for middle and high school students in each of the five U.S. cities where it operates aircraft repair stations. In Indianapolis, AAR and its customer Republic Airlines are part of a workforce development grant provided by the Education Workforce Innovation Network (EWIN)⁸ to develop an aviation career pathway focused on maintenance geared toward students K through 16 (up through a bachelor's degree candidate). This initiative will support consistent outreach and already has led to a unified aviation educational approach within several townships around the Indianapolis Airport.



AAR also sponsors educational tools outside the classroom, including the Design Hangar in the "How Things Fly" exhibit at the Smithsonian Air & Space Museum in Washington, D.C.; the Cradle of Aviation Museum's high school program in Long Island, N.Y.; and the Royal Aeronautical Society's Cool Aeronautics programs in the UK.

Wherever they come from, the future workforce will need real-world training for a changing aviation industry. Creating a talent pipeline to middle-skill jobs in aviation involves . . .

1. Making more training programs accessible and sharing best practices;
2. Updating the FAA's outdated Part 147 training requirements to become an A&P mechanic;
3. Highlighting the immediate availability of jobs for successful graduates;
4. Creating pathways to career advancement via portable, stackable industry credentials and certifications;
5. Pointing out the lower tuition costs of training for middle-skills positions compared to a four-year degree;
6. Raising awareness and exposure to these careers consistently so that the next-generation workers can choose aviation;

⁸ <https://iewin.org/>

7. Addressing discriminatory hiring practices and lack of diversity in the industry;
8. Casting a wider net to recruit more women and tap America's estimated pool of 6.5 million discouraged workers who are neither working nor in school;
9. Advocating for better data collection, including the demographic makeup of aviation maintenance students and workers, by government, educational and industry associations;
10. And petitioning the BLS to revise its standard occupation classification codes (SOC) classifying aviation careers, currently used to predict demand and labor shortages, to more accurately reflect skills required versus the type of materials used on the job.

The 2018 FAA Reauthorization Bill

Aligning aviation maintenance training curricula with business needs

has been a work in progress, but employers and trade groups made strides in the past year with the assistance of a pilot, U.S. Sen. Jim Inhofe (R-Okla.). The Aeronautical Repair Station Association (ARSA), an association of aviation industry experts that helps its members navigate the complicated world of government mandates while enhancing safety, efficiency and productivity,⁹ with Sen. Inhofe and its other allies successfully lobbied for a historic victory through last year's FAA reauthorization process. It includes several provisions that were outlined in bipartisan legislation introduced last year in the U.S. House and Senate, including the Aviation Workforce Development Training Pilot Program Sen. Inhofe co-sponsored with Senate colleagues Richard Blumenthal (D-Conn.), Jerry Moran (R-Kan.) and Maria Cantwell (D-Wash.). The reauthorization, approved in October, calls for the FAA to update its educational and training requirements to become an A&P certificated mechanic under a mandate known as Part 147 for the first time since the 1960s.¹⁰ It also enacts provisions of Sen. Inhofe's Aviation Maintenance Workforce Training bill, including an annual allocation of \$5 million for FAA education and training grants through 2023. Individual grants would not exceed \$500,000.¹¹ The measure further aims to encourage government, industry and academia to work together to create strategies to develop technical talent. It has received widespread support across the aviation industry, including from AAR President and CEO John Holmes.



What Actions Are Being Taken?

"These measures will help the company begin training the additional employees that we need and can put to work immediately in our repair facilities," Holmes said. "But ultimately, the goal is to increase opportunities across the industry, not just for AAR. Supporting growth of an aviation maintenance talent pipeline benefits us all."

The reauthorization included other measures aimed at general aviation and pilot recruitment, for instance. But the FAA training mandate and workforce development program exclusively for aircraft maintenance technicians demonstrates the depth of the problem and marks a significant victory for companies most impacted by the talent shortage.

⁹ <http://arsa.org/about/>

¹⁰ <https://www.inhofe.senate.gov/newsroom/press-releases/inhofe-applauds-passage-of-faa-reauthorization>

¹¹ <https://www.inhofe.senate.gov/newsroom/press-releases/inhofe-blumenthal-moran-cantwell-introduce-aviation-maintenance-workforce-development-pilot-program>

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Recognition of portable, stackable credentials. To fast-track careers, industry is focusing on developing short courses whereby students can earn stackable skills credentials that lead to FAA certification or a two-year associate's degree, and career advancement.

On the federal level, **the White House established the Task Force on Apprenticeship Expansion** and convened leaders from business, labor, trade groups, education and public agencies in Washington "to identify strategies and proposals to promote apprenticeships, especially in sectors where apprenticeships are insufficient" to address workforce shortages. In its report issued in May 2018, the Task Force espouses its support for creating pathways to new, industry-recognized apprenticeships (i.e., training programs).

The government's advocacy is well-timed with a growing shift among **education advocates** that for decades had solely espoused four years of college as the preeminent post-secondary choice to now embrace credentialing as a viable post-secondary option.

More importantly, people need to know that if they get the right training, jobs are available now and will be in the future. While the industry's call for joint public-private action is heard in boardrooms and in Congress, trade groups and companies mustn't wait for solutions to appear. It's imperative that industry take the lead by forging public-private partnerships to increase the number of programs and access to a new pool of talent.

Employers provide real-world experience. The industry, for years, has been challenged by the outdated FAA education and training standards for certificated aircraft mechanics. Requiring mechanics to learn techniques such as dope and fabric and other outdated curriculum requirements neither captures students' interests nor prepares them to work on today's legacy and next-generation aircraft. In addition to updating the FAA requirements, there needs to be a more prolific focus on STEM education, continuous learning and critical thinking to attract and retain today's tech-savvy young adults.

Faster job onboarding and upskilling. It can take up to four years to upskill a certificated A&P mechanic to a Level 1 technician per the EAGLE Career Pathway program. AAR has created a Support Technician job classification to onboard students from partner schools into the job pipeline faster and gain experience inside the MRO, if not on aircraft themselves. What's more, the students can earn while they learn. AAR is also involved in ongoing efforts to reduce the time it takes for a job candidate to become a Level 1 aircraft technician.



Students at Rock Valley College

Expanding recruitment. This includes increasing outreach to underrepresented racial and ethnic groups and women, and individuals who have a strong skills training and development background. AAR played a prominent role in the International Aviation Women's Association (IAWA) Conference in Memphis in 2018. Our HR specialists have stepped up recruitment of veterans transitioning out of the military, as well as individuals with parallel skill sets, like automotive and boat mechanics. And in Chicago, AAR partners with Aerostars Avion Institute, a public school serving

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primarily African American and Latino students created by aviation enthusiast and educator Tammera L. Holmes, an African American woman, focused on aviation careers. The sheet metal course at Olive-Harvey will open in March with 15 African American students recruited from Aerostar; 30% of the students are women. In addition, in 2018, AAR created a VP-level position and hired an experienced professional to focus exclusively on aviation workforce development.

At AAR, we believe strongly that aviation employers have the agility, vested interest, awareness of the problem and the expertise to close the skills gap. But our efforts will require ongoing support and cooperation from local and national government, outreach to civic and community organizations to identify talent, and more training programs with education partners to successfully bridge the gap between the demand for jobs and the supply of talent.



About AAR



AAR is an independent provider of aviation services to commercial and government customers worldwide. The company was incorporated in 1955 and today has revenues of \$1.8 billion with 6,000 employees in 20 countries. AAR's aftermarket expertise and award-winning market solutions, which can be integrated or leveraged separately, help customers increase efficiency and reduce costs while maintaining high levels of quality, service and safety. We are a trusted partner to airlines, militaries and OEMs, delivering competitiveness so they can focus on transporting passengers, cargo and parts around the world.

AAR is ranked the No. 1 independent aircraft MRO provider in North America and No. 3 in the world by industry executives. Led by just three CEOs in its 63-year history, currently John Holmes, AAR has earned a reputation for quality, safety and customer satisfaction and has been recognized by Forbes magazine as "100 of the Most Trustworthy Companies."

AAR offers a diverse portfolio of solutions and services, including MRO, parts supply, integrated solutions and manufacturing capabilities. Careers at AAR require a range of skill sets. But as a labor-intensive, aircraft services company, AAR relies heavily on a middle skills, FAA-certificated workforce.



**A Talent Crisis at
a Time of Record
Growth**

Air travel is growing worldwide. In 2016, the latest figures available, airlines carried 3.8 billion passengers, a 6.8% increase from 2015, and 53 million tons of freight (up 4%) and goods valued at \$18 billion USD.¹² That same year, there were 35 million scheduled commercial flights and 54,000 routes, which is 2,000 more than the year before.¹³ Historically, air transport has doubled in size every 15 years and has grown faster than most other industries.¹⁴ In recent years, AAR, following industry trends and customer needs, has expanded its business in Europe, Africa, the Asia-Pacific region, the Middle East and India. Most will agree, the industry outlook is bright. Air travel remains the safest form of transportation and, according to forecasts, the volume of air traffic will double by 2034.¹⁵

Aviation has weathered unfavorable business cycles to maintain its position as a key indicator of global and domestic economic health. But planes cannot fly safely without people skilled in their ongoing maintenance and repair. Legacy aircraft, which describes those more than 14 years into their lifecycle, require heavy maintenance checks on average every two to four years. Declining enrollments in aircraft maintenance and training academies triggered by the industry slump post-9/11 have yet to return to pre-9/11 levels. Meanwhile, aviation training schools have the capacity to double production of A&P candidates. As of mid-November, enrollment at AMT training schools was 17,800, nearly half their capacity of 34,300.¹⁶

Studies project demand of 189,000 aircraft maintenance technicians in North America and approximately 750,000 worldwide through 2037. But the short supply is already alarming for aircraft mechanics and sheet metal technicians and other production-related jobs inside the MRO. Most aerospace and defense (A&D) executives agree that the common challenge facing operators and aviation services providers around the world is the talent gap. In Aviation Week's 2018 survey of CEOs from A&D companies, 75 percent of respondents said they are concerned about the availability of key skills.¹⁷

¹² Industry High Level Group, Aviation Benefits 2017

¹³ Ibid

¹⁴ Ibid

¹⁵ ATEC

¹⁶ Aviation Week, 2018, "A&D Shifts Focus to Reskilling, Recruiting, Reshaping Workforce"

¹⁷ Industry High Level Group, Aviation Benefits 2017

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These workforce challenges come at a time of record low unemployment, industry growth and expansion, and excitement over next-generation aircraft and emergent technologies. Instead of making it easier to find talent, low unemployment has exacerbated the workforce challenges A&D executives have been grappling with for several years.



This is indeed the case as it relates to recruitment and training for critical middle skills, hands-on careers that do not require a four-year degree. These jobs are classified as STEM-related, but the aviation sector has not gained the benefit of the enhanced visibility placed on STEM education. Instead, these efforts have tended to focus on attainment of a four-year college degree at the exclusion of certificated and non-certificated careers. The talent pipeline for behind-the-scenes

middle skills careers in aviation such as A&P mechanics and sheet metal technicians – critical cogs in the wheels that drive an industry that generates USD \$2.7 trillion and accounted for 3.5% of the world’s gross domestic product in 2016¹⁸ – is aging faster than it can be replenished.

Statistics show the so-called gray wave of aircraft maintenance technician retirements is happening slower than first predicted. Nonetheless, in 2018, 30% of the workforce is at or near retirement age, new technicians account for just 2% of industry workers, and airframe mechanics ages 60 and older account for 30%, a 3% increase over the previous year.¹⁹

AAR has been actively working to mitigate these challenges. In 2011, recently retired AAR Chairman and CEO David P. Storch commissioned the special report, “The Mid-Skills Gap in Middle America: Building Today’s Workforce,” to identify solutions, partners and best practices to solve the company’s own workforce challenges and shine a light on the potential threat to growth and sustainability of world air travel posed by the skills gap. At the time, the average age of an aircraft technician was 47.17 years.²⁰ Today, the average age is 51.²¹

The report offered AAR as a real-life example of a midsized U.S.-based company working diligently to remove barriers to education, recruitment, training and retention, while providing thought leadership on issues that are impactful in adjacent industries such as manufacturing.



¹⁸ Industry High Level Group, Aviation Benefits 2017

¹⁹ ATEC Pipeline Report, December 2018

²⁰ Aviation Week, 2018, “A&D Shifts Focus to Reskilling, Recruiting, Reshaping Workforce”

²¹ ATEC 2017 Pipeline report

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The good news is that since AAR's last workforce report, there have been signs of progress outside the industry.

1. Promotion of applied skills and trades to youth starting at an earlier age;
2. An uptick in outreach to discouraged workers who are neither in the workforce nor in school to enroll in middle skills training programs;
3. Improved, aggregate access to information about aviation skills credentials and certifications online;
4. And a growing recognition of the post-secondary achievements of students entering industry-certificated and non-certificated careers that do not require a four-year degree.



The Reasons We Have These Problems

For industries that depend on hands-on skilled labor, one of the greatest challenges to building a talent pipeline for decades has been negative perceptions about these types of jobs. There was a time when for most Americans, a high school diploma was a ticket to a factory job and the fruits of middle-class life. From 1945 until the early 21st century, the largest percentage of jobs involved work that didn't require a four-year degree.²² Good-paying manufacturing jobs built the world's greatest middle-class economy. But the acute shortage of qualified workers didn't happen overnight. Starting in the 1950s, vocational education slowly gained a hard-to-shake stigma as a path for those unequipped to enroll in a four-year college. Meanwhile, the end of the draft in the early 1970s led to a shrinking of the military and its role as the hands-on training ground for future civilian aviation mechanics. Then, jobs requiring less than a bachelor's degree steeply declined beginning in 1999.²³ The fall-off occurred just as the nation saw a surge in the use of industrial robots and China's addition to the World Trade Organization in 2001.

The early 2000s brought automation and globalization, reducing the incentive for Americans to train for skilled work that no longer existed. In aviation, those jobs remained but recruitment became challenged further by the airline industry slump after 9/11. For Americans with a high school diploma or less education, those changes significantly reduced their access to middle-income jobs, defined in a Georgetown University report as paying a minimum national average of \$35,000 for workers between the ages of 25 and 44 and at least \$45,000 for workers between the ages of 45 and 64.²⁴

While many of those jobs vanished with outsourcing, globalization and technological advances such as robotics, the people who held them have not. A growing number have joined the ranks of discouraged workers. The labor participation rate, in fact, has been falling since the Great Recession. In October 2008, 66 percent of eligible workers were in the labor force. By October 2018, that rate had dropped to 62.9 percent, a level not seen since the economic doldrums of the late 1970s.²⁵ This despite a tight labor market and a national unemployment rate of 3.9 percent (as of Dec. 2018).²⁶

^[22] "Education Pathways to Good Jobs: High School, Middle Skills, and Bachelor's Degree," The Georgetown University Center on Education and the Workforce

^[23] Ibid.

^[24] Ibid.

^[25] BLS, "Labor Force Participation: 75 Years of Change, 1950–98 and 1998–2025," December 1999 ^[26] Ibid.

^[26] BLS, national unemployment statistics

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If the participation rate and the unemployment rate are so low, that must mean one thing: 1.7 million discouraged jobseekers have given up finding work and, therefore, are no longer counted as either working or unemployed. These individuals were not in the labor force, although they wanted work and were available for employment, and had looked for a job sometime in the prior 12 months. They were not counted as unemployed because they had not searched for work in the previous four weeks. Another 4.8 million persons worked part time because of economic reasons. Sometimes referred to as involuntary part-time workers, these individuals, who would have preferred full-time employment, were working part time because their hours had been reduced or they were unable to find full-time jobs. This pool of 6.5 million Americans that includes discouraged jobseekers and involuntary part-time workers represents a pool from which the aviation industry can draw students for training.²⁷



Students at Rock Valley College

For nearly a decade, AAR has actively sought to mitigate negative perceptions about skilled labor by hosting programs at middle and high schools located near its aircraft repair centers to talk to teachers and counselors about middle skills careers. AAR has offered summer internships and hosted Tug 'n Tour events at its MROs in Indianapolis and Oklahoma City to expose middle and high schoolers to real-life work experiences inside the hangar. For many of the students from AAR's partner high school in Chicago, Perspectives Charter Schools, it was their first time aboard an airplane.

Each year, the Aviation Technician Education Council based in Jenks, OK, compiles information about A&P mechanic FAA certificate holders, the educational institutions that prepare the majority of these individuals for careers in aviation maintenance, and the companies that employ maintenance professionals. Among the conclusions in ATEC's 2018 Pipeline Report released in December:

- The mechanic population is projected to decrease 5% in the next 15 years.
- Schools have the capacity to double production of A&P candidates. As of mid-November, enrollment at AMT training schools was 17,800, nearly half their capacity of 34,300. As institutions are ramping up recruitment activities and expect enrollment to increase, industry employers can tout the benefits of credentialing, thereby attracting more students to those schools.
- Aviation must increase its focus on retaining A&P candidates. Twenty percent of candidates pursue careers outside of the industry and only 60% elect to take the FAA mechanic certification test.
- While the percentage of female A&Ps is increasing, it remains low, at less than 3%. This presents an opportunity to help address a looming shortage.



²⁷ BLS, "Employment Situation News Release," December 7, 2018

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Job Classification Codes Are Not Aligned with Industry Qualifications

AAR and ATEC agree there needs to be better data collection and reporting by the government to more accurately forecast demand for talent, and to capture participation rates by racial and ethnic minorities. For instance, the BLS assigns all technicians, with the exception of avionics technicians, to one group. Crystal Maguire, Executive Director of ATEC, says the organization has petitioned the BLS to reconsider how it delineates its data, and a large industry contingency has signed on.

The BLS only updates the standard occupational codes (SOC) every 8 to 10 years, and only responds to formal requests. ATEC submitted comments in 2016.



“Its response to our numerous requests to change the way they track aviation maintenance techs is that the SOC codes are based on what a person is working on and not necessarily the qualifications of a person. And we’d have to wait another eight years to make the argument again,” said Maguire.

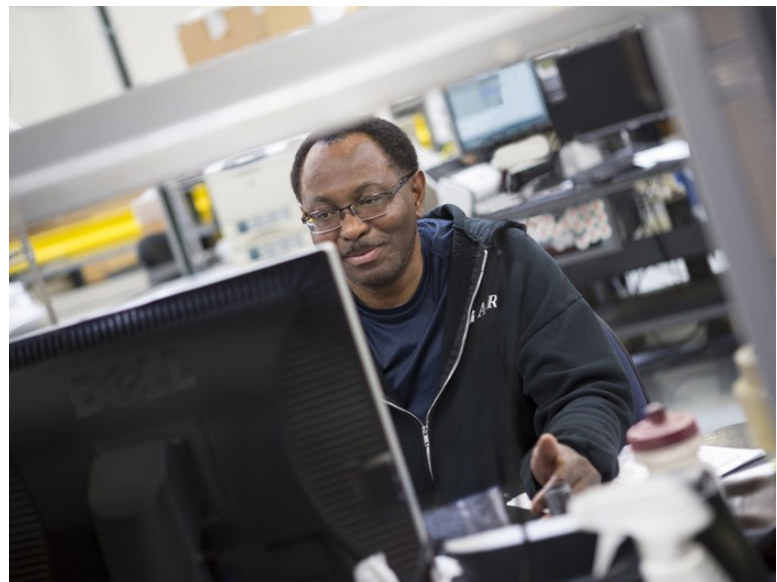
The SOC codes led to a less-than-accurate interpretation of job and growth prospects in aviation maintenance, Maguire added. The BLS outlook did not represent the acute talent shortage forecast by independent industry

researchers like Boeing and ATEC that use data from A&P training schools and the FAA, which doesn’t use BLS data and only tracks certificated maintenance employees, she said.

“Maintenance careers weren’t looking very good on average, because they weren’t using good methodologies to determine demand,” Maguire said. “Compared to healthcare, that made it look like it wasn’t growing.”

The BLS’s growth projections rose after the agency altered the way that number was calculated. Inaccurate projections only compound the labor shortage in a tight labor market with low unemployment. But a deeper look into the numbers reveals a huge pool of potential aviation maintenance employees who could be trained and upskilled to work on aircraft ramped up to production level in as little as three years, said AAR’s Vice President of Aviation Workforce Development Ryan Goertzen.

The millions of invisible unemployed represent an untold loss of human potential and a brake on the nation’s economy. At AAR, we believe the industry must address its historical lack of racial, ethnic and gender diversity and make concerted efforts to expose underrepresented groups to careers and educational opportunities and be intentional about recruiting.



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Untapped Potential

One advantage is that for the first time in decades, training at a specialized school or a two-year degree is financially more attractive to matriculating youth than a four-year degree today than in the past. It costs an average \$20,770 a year to attend an in-state school when tuition, fees, room and board are added up, according to the College Board. The average student in the Class of 2017 graduated more than \$28,000 in debt.²⁸

Only recently has there been a shift among some educational organizations and advocacy groups to recognize skills credentialing and industry certifications on equal footing with a bachelor's degree. But it is too early to predict or assess any outcomes due to this new perspective.

To mitigate these challenges, over the last decade AAR has formed partnerships with local colleges and technical training schools near its five MROs in the U.S. to develop curriculum and provide job experiences for students in modern airframe and power plant technology. AAR hires students from these programs, granting every graduate an interview, and has created on-ramps to full-time employment through paid apprenticeships.



Define Aviation Career Pathways for Jobs Available Now

Unlike the clearly defined career path for a professional pilot, where the positions are either to work as a pilot or within a management structure, the pathway for maintenance personnel is multifaceted and expands to many different sectors of an organization. There is "significant opportunity for industry employers to help define career paths and attract more students into the pipeline."²⁶

EAGLE Career Pathway

In October 2018, AAR introduced its EAGLE Career Pathway program at Western Michigan University in Kalamazoo. Since then, AAR has added City Colleges of Chicago's Olive-Harvey campus; Rock Valley College in Rockford, Ill., Lake Superior College in Duluth, Minn., and Vincennes University in Indianapolis as EAGLE Pathway schools. AAR intends to launch EAGLE at two schools in 2019 located near aircraft repair stations in Oklahoma City and Miami.

²⁸ Press Release, The Institute for College Access & Success, September 18, 2019

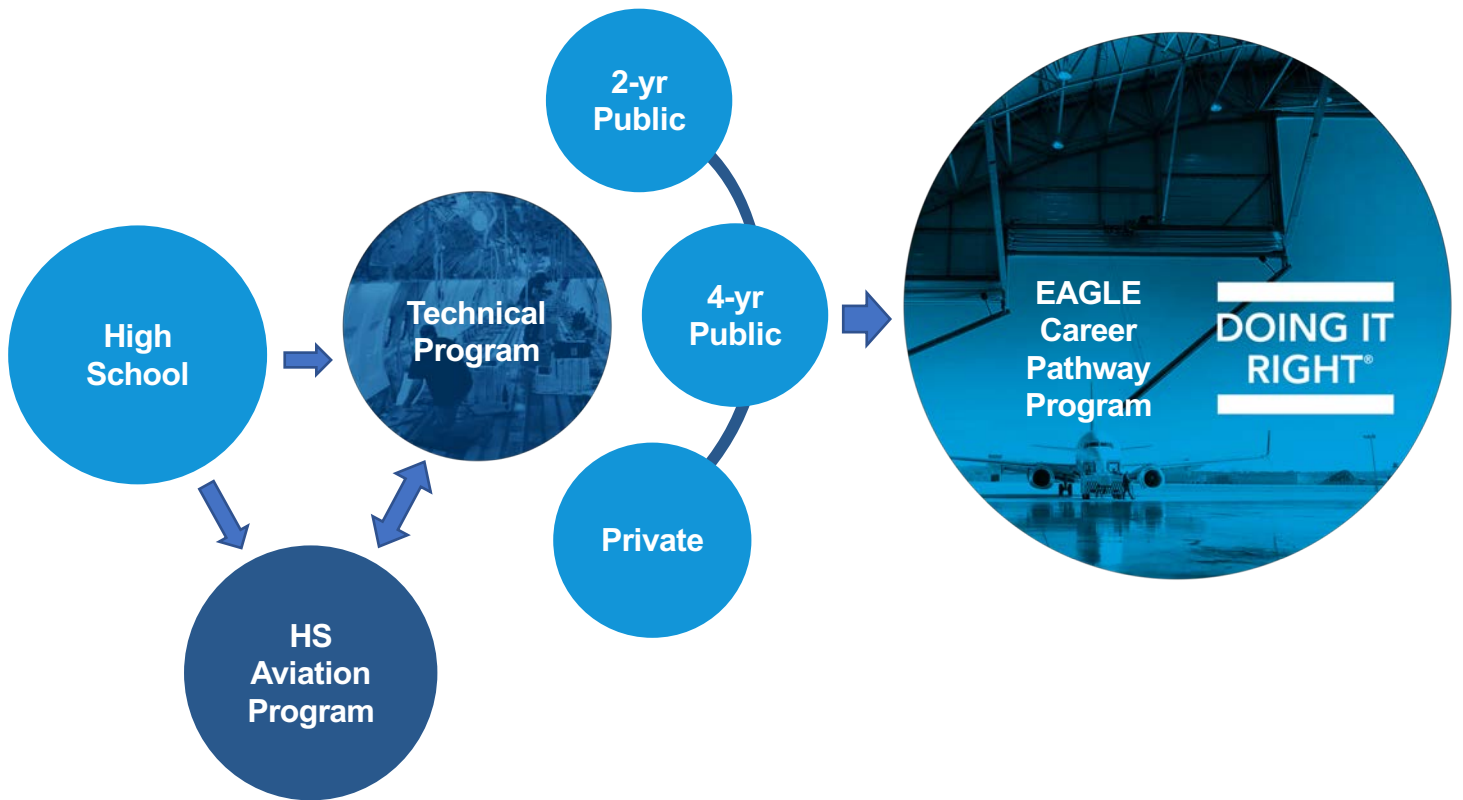
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The Eagle Career Pathway Program has been developed to address the severe shortage of technicians facing AAR and the broader aviation industry. EAGLE is the first-ever career pathway program focused on aviation maintenance technician careers and beyond.

EAGLE uses stackable credentials to:

1. Help students advance more quickly to jobs on multiple tracks.
2. Create a pathway to become an FAA-certificated airframe and powerplant (A&P) mechanic.
3. Open up new markets of talent that can be utilized throughout the AAR MRO network.
4. Create direct paths to jobs available now.



EAGLE Pathways: Bridging the Middle Skills Gap to Careers in Aviation

The EAGLE Career Pathway program is dedicated to growing the talent necessary to meet the maintenance demands of the future with a focus on 5 Core Values:



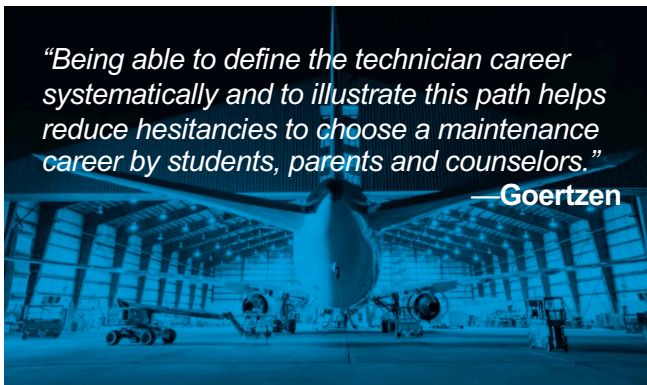
- Ethics
- Airworthiness
- Greatness
- Leadership
- Engagement

“The maintenance career path has been shrouded in mystery and occurring beyond the security fence, limiting access and understanding by the general public. EAGLE attempts to bring clarity by defining the career path beyond the technician to positions in management, maintenance operations and quality control. Within these defined paths are even more positions and departments that provide for opportunities for personnel to grow their aviation maintenance career.”

—Ryan Goertzen, Vice President, Aviation Workforce Development, AAR

EAGLE Pathway Partners

EAGLE Career Pathway enhances aircraft maintenance repair and technology instruction at participating schools. It will provide students with real-life work experience inside the hangar and includes job shadowing and mentoring. Students will receive academic support and monitoring and have an opportunity to interview with AAR upon graduation.



“Being able to define the technician career systematically and to illustrate this path helps reduce hesitations to choose a maintenance career by students, parents and counselors.”

Goertzen

EAGLE is also a marketing tool to those colleges and universities that are signed up as EAGLE Pathway Partners. In addition to providing clarity to the maintenance career and associated salary growth potential, AAR is providing up to \$15,000 in tuition assistance to be paid toward the students' FAA certification training. Students will earn this tuition assistance and salary increase by growing their skills within the framework of the EAGLE program from a Level III technician to Level I.

EAGLE Pathways: Bridging the Middle Skills Gap to Careers in Aviation



Michigan

Western Michigan University, Kalamazoo

The newly launched AAR Eagle Career Pathway program at WMU will expand the university's aircraft maintenance, repair and operating supply instruction, and include sharing of proprietary software information with students who are interested in careers as aircraft maintenance technicians.

Indianapolis

Vincennes University, Aviation Technology Center

The ATC is a 92,000-square-foot facility that provides state-of-the-art aviation training programs for airframe and power plant mechanic and airframe sheet metal technician careers requiring FAA certification for both Vincennes and Purdue Universities. For nearly a decade, AAR's Indianapolis Maintenance Center (IMC) has been the training ground for Vincennes students enrolled in its aviation education program. The IMC is a wonder to behold at 1.6 million square feet located near Indianapolis International Airport.

"AAR EAGLE is about growing the maintenance technician talent pipeline and educating high school students on the exciting opportunities available to them in aviation maintenance. Working alongside universities and colleges, like Western Michigan, we will provide a five-year career path program with access to the largest maintenance repair and overhaul network of facilities in the Americas. Our efforts will help address the industrywide shortage of technicians as well as guarantee high-paying jobs to participants in the program."

—John Holmes,
President & CEO, AAR

AAR also has teamed up with Republic Airlines to heighten awareness of aviation maintenance careers locally among students ages K through 16. The initiative is funded through a workforce development grant

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EAGLE Career Pathway marks an expansion of AAR's existing relationships with colleges in Rockford, Duluth and Indianapolis, enhancing the curriculum and the job experience. These schools also benefit from a special Support Technician job category created by AAR to onboard talent faster. Mechanics in training and technician apprentices gain experience inside the MRO, if not on aircraft themselves, and earn while they learn.

Rockford Airport Authority and received a \$15 million investment from the State of Illinois to stand up a 200,000-square-foot, state-of-the-art wide-body MRO facility at the airport, which opened in 2016. Rock Valley College agreed to enhance its A&P training program and built a 40,000-square-foot training facility near the airport. AAR also received \$600,000 from the state to put toward training costs for new employees. As a result, enrollment in the college's A&P program went from 40 to full capacity at 170 students.

Duluth, MN Lake Superior College

The college has been a constant partner with AAR since the company took over an abandoned aircraft MRO there in 2013. The college had stopped offering its aviation maintenance program after the airline that once occupied the repair station closed shop. AAR re-engaged the college, updated the curriculum and promised every graduate an interview. The company even took out a billboard with the college to boost recruitment and heighten awareness of job opportunities for graduates.

Chicago, IL City Colleges of Chicago, Aviation Futures Training Center at Olive-Harvey College

AAR, City Colleges and the Chicago Mayor's Office last December announced creation of the Aviation Futures Training Center at Olive-Harvey College. The facility, located about a mile from the Olive Harvey campus, will include up to 12,000 square feet of instructional and training space. It is slated to open in March and at full capacity will be able to accommodate up to 200 students per course cycle.

During Phase I, in addition to classroom instruction, students will gain experience working on the fuselages of aircraft procured and donated by Christiansen Aviation in Tulsa, Okla. Subsequent phases will provide students opportunities to earn portable, stackable credentials to fast-track careers at airports, OEMs and aircraft maintenance facilities.

provided by the Education Workforce Innovation Network (EWIN)²⁷ and already has led to a unified aviation educational approach within several townships around Indianapolis International Airport.

Rockford Rock Valley College, wide-body hangar at Chicago-Rockford International Airport

After a series of aviation wins, federal, state and local leaders came together in 2014 to enhance aviation training and job prospects in Rockford, Ill. AAR entered an agreement with the Greater



²⁷ <https://iewin.org>

EAGLE Pathways: Bridging the Middle Skills Gap to Careers in Aviation

Oklahoma City, Okla. Francis Tuttle Technology Center

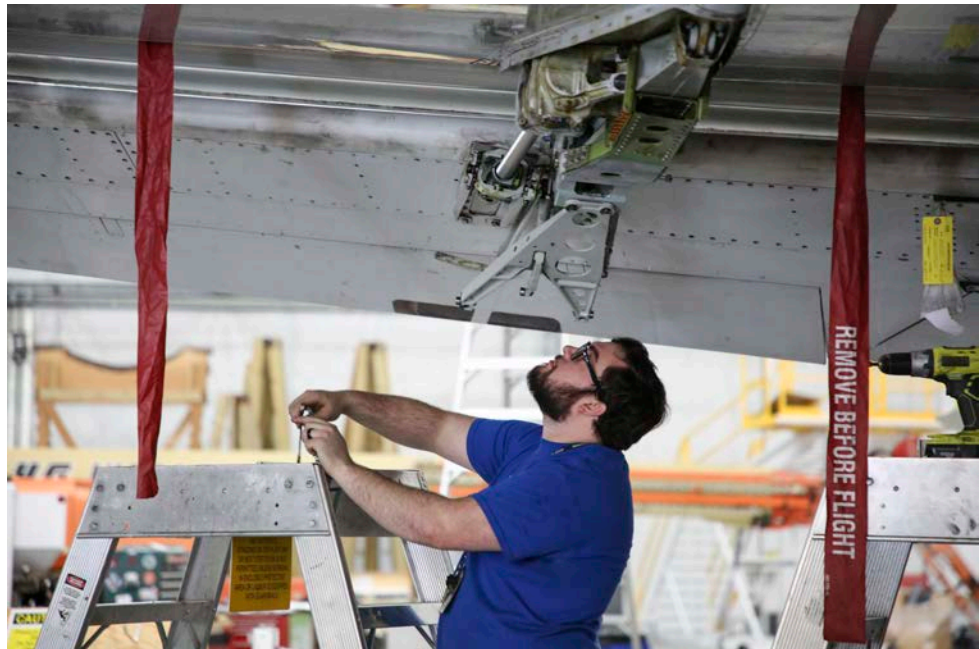
The EAGLE Career Pathway 300-hour sheet metal curriculum was first developed by AAR in 2006 in partnership with Francis Tuttle Technology Center to grow much needed skill sets and create a talent pipeline at our Oklahoma City MRO. AAR has grown that program into the sheet metal course being offered at Olive-Harvey in Chicago and Rock Valley College in Rockford. AAR also supports scholarships for 100 teachers across the state to attend the Oklahoma Aerospace Summit and Expo summit and purchase supplies to teach youth about careers in aerospace. AAR is committed to hire 10 percent of graduates from Spartan College of Aeronautics and Technology and provide tuition reimbursement in exchange for a commitment to work for AAR for a minimum of three years. AAR also partners with KIPP Reach and Western Heights High School to educate, mentor and recruit for aviation jobs, hosting aviation essay contests and career days and providing summer internships.

Why Sheet Metal?

Employment of sheet metal workers is projected to grow 9 percent from 2016 to 2026, according to the U.S. Bureau of Labor Statistics. Because aircraft sheet metal is not regulated by the Federal Aviation Administration (FAA), industry and educators can develop creative onboarding strategies tuned to the needs of business to get talent in the career pipeline faster.

Miami Broward County College

Since 2011, AAR has partnered with the college to expose students to careers in aviation, hosting events at our Aircraft Services and Landing Gear facilities in Miami, located near the airport. We offer scholarships to high school students, and our executives and HR personnel participate in local career fairs.



EAGLE Pathways: Bridging the Middle Skills Gap to Careers in Aviation was produced by AAR with Treetop Consulting Inc. (www.tcgrowingideas.com) and senior writers T. Shawn Taylor and Eric Gwinn.

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