

# Earn While You Learn: The Apprentice School at Newport News Shipbuilding



# EARN WHILE YOU LEARN: THE APPRENTICE SCHOOL AT NEWPORT NEWS SHIPBUILDING

*Young people learn through observation, imitation, trial and error, and reiteration; in other words, through force of experience. Though professionalism and care are expected, perfection is not. Adult mentors hold the discipline for the apprentice, sequencing and controlling task demands to keep them on the constructive side of difficulty. They direct apprentices' attention, demonstrate and sometimes collaborate.*

– Robert Halpern, “The Means to Grow Up: Reinventing Apprenticeship as a Developmental Support in Adolescence”

**P**ublications like Forbes and The Wall Street Journal increasingly highlight a conundrum facing companies and the education system in the United States. Firms are complaining that they have plenty of job openings, but the education system is failing to train students in the skills needed to fill them. Hampton Roads, like other regions, suffers from this “skill mismatch” – the divergence between the skills students are taught and employers’ needs in the job market. According to a recent report,<sup>1</sup> firms in Hampton Roads are struggling to find entry-level and middle-skill employees in key growth sectors, such as advanced manufacturing. Other positions that are difficult to fill locally include trades, such as technician, mechatronics/repair technician, welder, shipbuilder, pipefitter and machinist, along with warehouse and packing personnel. These jobs are not only high paying, but also critical to the economic vitality of the region.

Several recent presidential administrations have pushed to solve this problem by increasing the number of apprenticeships. An age-old practice, apprenticeships allow individuals to earn a paycheck while receiving supervised training and work-based learning in conjunction with academic instruction. Indeed, apprentices are both student-employees and employee-students. The apprenticeship model has been a mainstream route to career success in many European countries; however, it has struggled to gain a foothold in the United States.

**There is a lot to like about apprenticeships. They provide benefits to both employers and workers. Workers experience a smoother transition from school to career, compared to most school-based preparation. Furthermore, apprenticeships can**

<sup>1</sup> “Hampton Roads Talent Alignment Strategy Initiative: Supply and Demand Gap Analysis,” (2019), commissioned by the Hampton Roads Community Foundation in partnership with the Hampton Roads Workforce Council.

**provide a lucrative path to meaningful work for those who complete them. The average starting salary for an apprentice who completes a program in this country is \$72,000, which is 35% higher than the median wage in Hampton Roads. Also, apprentices tend not to struggle with student loan debt, unlike many traditional college graduates.** For the apprentice, earning an income while learning an occupational skill confers a sense of pride and identity, along with the confidence in knowing their investment and effort will pay off. Employers benefit by gaining loyal, skilled employees. According to the U.S. Department of Labor, employers retain 92% of employees who have completed an apprenticeship.

As it turns out, Hampton Roads is home to the gold standard for the apprenticeship model in this country: Newport News Shipbuilding’s (NNS) Apprentice School. Founded in 1919, The Apprentice School has trained more

than 10,000 apprentices and evolved into a full-service academic institution. In 2020, the State Council of Higher Education for Virginia granted approval for The Apprentice School to award academic degrees, and the school now offers associate degrees in several applied sciences disciplines. Today, over 700 apprentices are enrolled. They spend two days a week in academic classes, with their remaining time in on-the-job training, learning leadership skills and a trade such as electrician or machinist. Apprentices earn while they learn, making almost \$18 per hour when they start and up to \$30 per hour by the completion of their program. The \$18 hourly wage is \$6 per hour higher than the median hourly wage in Hampton Roads. Further, they receive a myriad of other benefits, including health and life insurance, a 401(k) savings plan and paid leave. In this chapter, we look at the apprenticeship model and delve into the unique aspects of the NNS Apprentice School that have made it so successful.

## The Apprenticeship Model

### A BRIEF LOOK AT APPRENTICESHIPS THROUGH HISTORY

The master-apprentice relationship dates back to the 18th century B.C. in Egypt and Babylon. Nearly 4,000 years ago, these ancient civilizations understood the need for skilled craftsmen and codified rules that required artisans to teach their skills to the next generation. Over the course of the Roman Empire, craftsmen went from primarily being slaves to forming independent professional organizations, or “collegia,” such as the trade guilds “collegia opificum.”

Craft guilds would become a hallmark of medieval Europe. The guild system, made up of masters, journeymen and apprentices, oversaw production quality and working conditions for each trade group in a town. Similar to modern-day apprenticeships, they involved a collaborative relationship between a skilled adult and a younger pupil. Apprentices developed skills through imitation and guided experimentation under the watchful eyes of a mentor. As Bert De Munck and Hugo Soly put it in a 2007 book they co-edited with Steven L. Kaplan,

apprentices “learned on the shop room floor.”<sup>2</sup> Apprentices would often train for up to seven years before graduating to journeymen and travel between towns to learn and teach new techniques.

Scholars point to the apprenticeship system as an important impetus to Europe’s rise in the Industrial Revolution. When this system worked well, it led to the transfer of information and knowledge. It resulted in innovation through thoughtful and well-trained artisans who advanced the frontiers of knowledge. Historians have attributed major advances in European craft production – in areas as diverse as shipbuilding, textiles, lens grinding, metalworking, printing, mining, clockmaking, millwrighting, carpentry, ceramics and painting, among others – to the apprenticeship system.<sup>3</sup> European settlers also leveraged the apprenticeship system in Colonial America. In fact, several of our Founding Fathers, including George Washington (surveyor), Benjamin Franklin (printer) and Paul Revere (silversmith), trained as apprentices.

Despite having similar roots, the apprenticeship system that flourished in several European countries, including Austria, Switzerland and Germany, floundered in the United States. There are many reasons why. After World War II, the U.S. became obsessed with the idea that college was the primary pathway to the middle class and upward mobility. Furthermore, there was a strong desire to avoid creating curricula that grouped students based on perceived ability, IQ or achievement levels – known as “tracking” in education. There were also political complications that involved class, culture and unions. In contrast, after the fascist uprising following World War I, some European countries saw the need to connect their education system to the economy in order to ensure employment, especially for young men. To accomplish this, these countries introduced apprenticeships, job training and other programs.

### THE CURRENT STATE OF AFFAIRS

Apprenticeship programs around the world today are as diverse as the countries that have them. In fact, in some European nations, they offer a mainstream route to career success. In Germany, Austria and Switzerland,

<sup>2</sup> Bert De Munck and Hugo Soly, “Learning on the Shop Floor in Historical Perspective,” in *Learning on the Shop Floor: Historical Perspectives on Apprenticeship*, Steven L. Kaplan, Bert De Munck and Hugo Soly, eds. (New York: Berghahn Books, 2007), 3-32.

<sup>3</sup> David de la Croix, Matthias Doepke and Joel Mokyr, “Clans, Guilds, and Markets: Apprenticeship Institutions and Growth in the Preindustrial Economy,” *The Quarterly Journal of Economics* (2018), 133(1), 1-70.

50% to 70% of young people filter through the apprenticeship system. The apprenticeship models in these countries are often viewed as the gold standard for vocational learning.

For instance, many have praised the German system for the country's low youth unemployment rate; ability to maintain a vibrant, high-quality manufacturing sector; and role in helping it weather economic downturns. In Germany, the system that regulates vocational training emerged formally in 1969. However, its historical roots run deep. Over the years, arrangements between unions and management have reinforced the system through strict certification standards. The certifications cover more than 300 occupations that range from blue-collar trades to an increasing collection of white-collar professions, such as information technology and engineering. Young people start taking either the apprenticeship or academic track as early as fourth grade. The track ultimately chosen is based on discussions among the school, child and parents, and takes into consideration grades, abilities and aptitude. Upon completion of compulsory schooling, apprentices spend three to four days a week devoted to workplace learning and the remainder of the week in government-funded schools for academic learning. This model creates a smooth transition from school to work, one of the German system's major benefits. In 2017, apprentices accounted for 52.9% of students in Germany's dual-track education system. A total of 427,227 companies participated, amounting to 20% of all German employers.

Apprenticeships in the United States look more like a patchwork quilt of state and federal policies compared to the highly regulated model that is integrated into the fabric of the German education system. Both the Obama and Trump administrations tried to bolster apprenticeships, albeit in different ways. For instance, in 2014, President Obama hosted the first-ever White House Summit on American Apprenticeships and set a goal of doubling the number of apprentices over five years. To accomplish this, the administration made \$175 million in federal public-private partnership grants available to "increase apprenticeships in high-growth fields; align apprenticeships with further learning and career advancement opportunities; and take successful apprenticeship models to scale."<sup>4</sup> In contrast, President Trump signed a 2019

<sup>4</sup> <https://obamawhitehouse.archives.gov/blog/2014/07/14/first-ever-white-house-summit-american-apprenticeship-helping-american-workers-punch>.

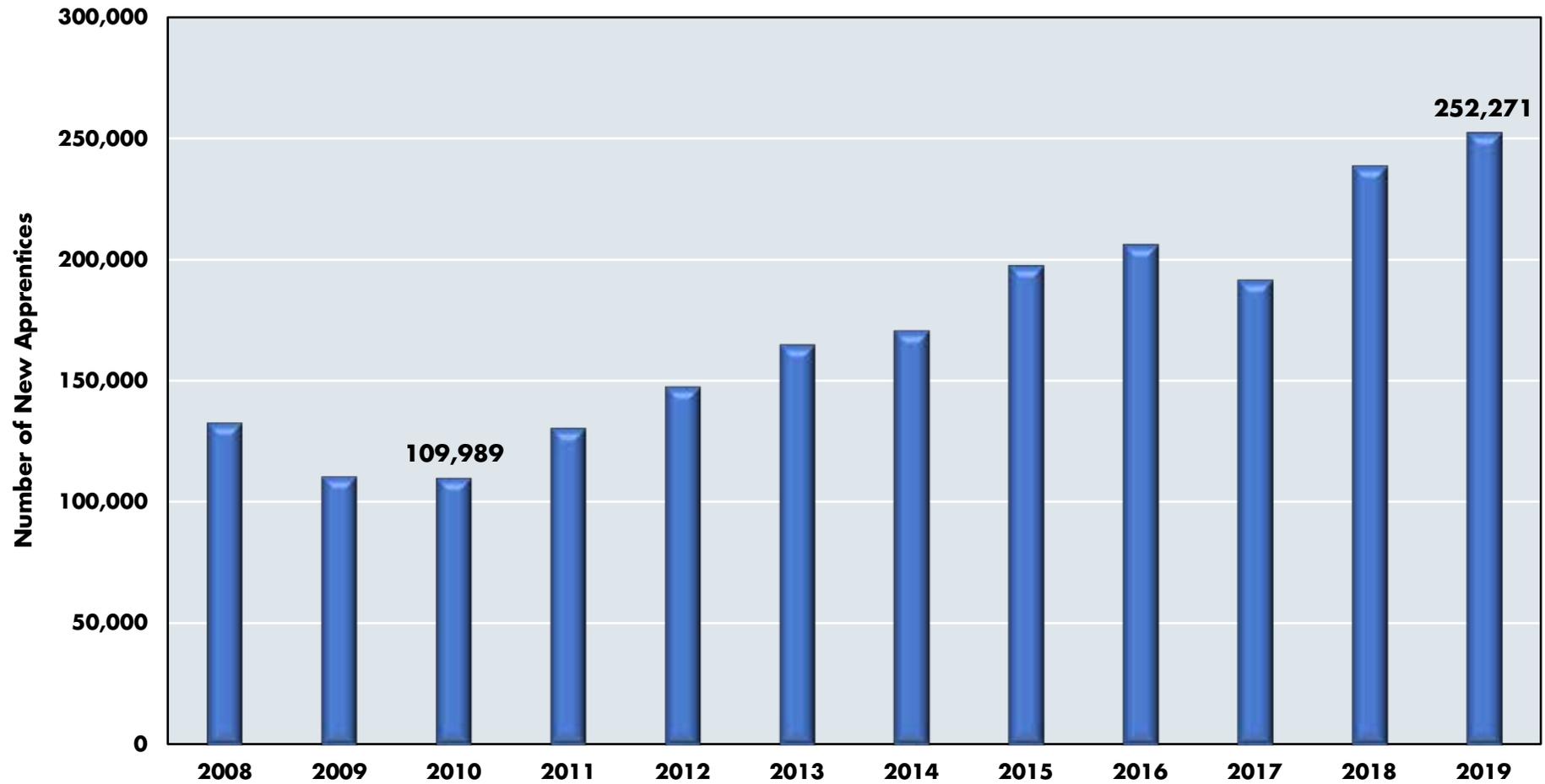
executive order creating a new "industry-recognized" apprenticeship program outside of the Department of Labor. Groups such as trade associations, educational institutions, nonprofits or labor unions could become the entities that set the training and curriculum standards relevant to their industry. Despite this renewed interest, neither policy appears to have moved the needle on apprenticeships.

With the oscillating policies of the last two administrations, how have apprenticeships fared? Graph 1 includes data from the Department of Labor on the number of new apprentices starting each year, while Graph 2 displays the percentage of new apprentices for a cohort's entrance into the workforce. **The trajectory was clearly positive over the last decade. The total number of new student workers entering apprenticeships grew by 129% from 2010 to 2019. Furthermore, apprenticeships made up 5.7% of the average 20-24-age cohort, up from 2.6% a decade earlier. Despite the growth in the number of new apprentices, the number of active programs has fluctuated and was lower in 2019 than a decade earlier (Graph 3).**



GRAPH 1

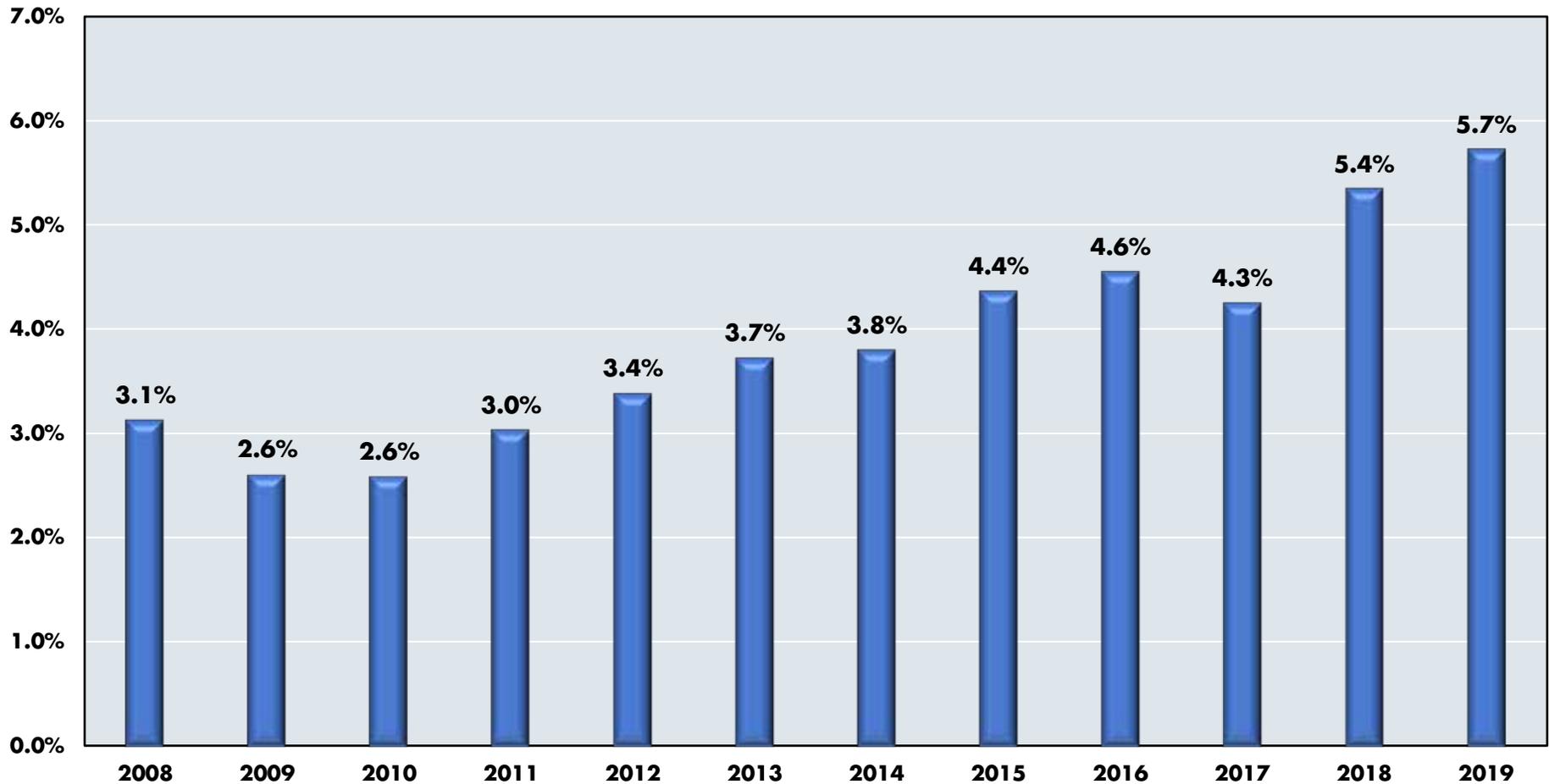
NEW APPRENTICES: UNITED STATES, 2008-2019



Source: Department of Labor

GRAPH 2

PERCENT OF A COHORT IN APPRENTICESHIPS: UNITED STATES, 2008-2019

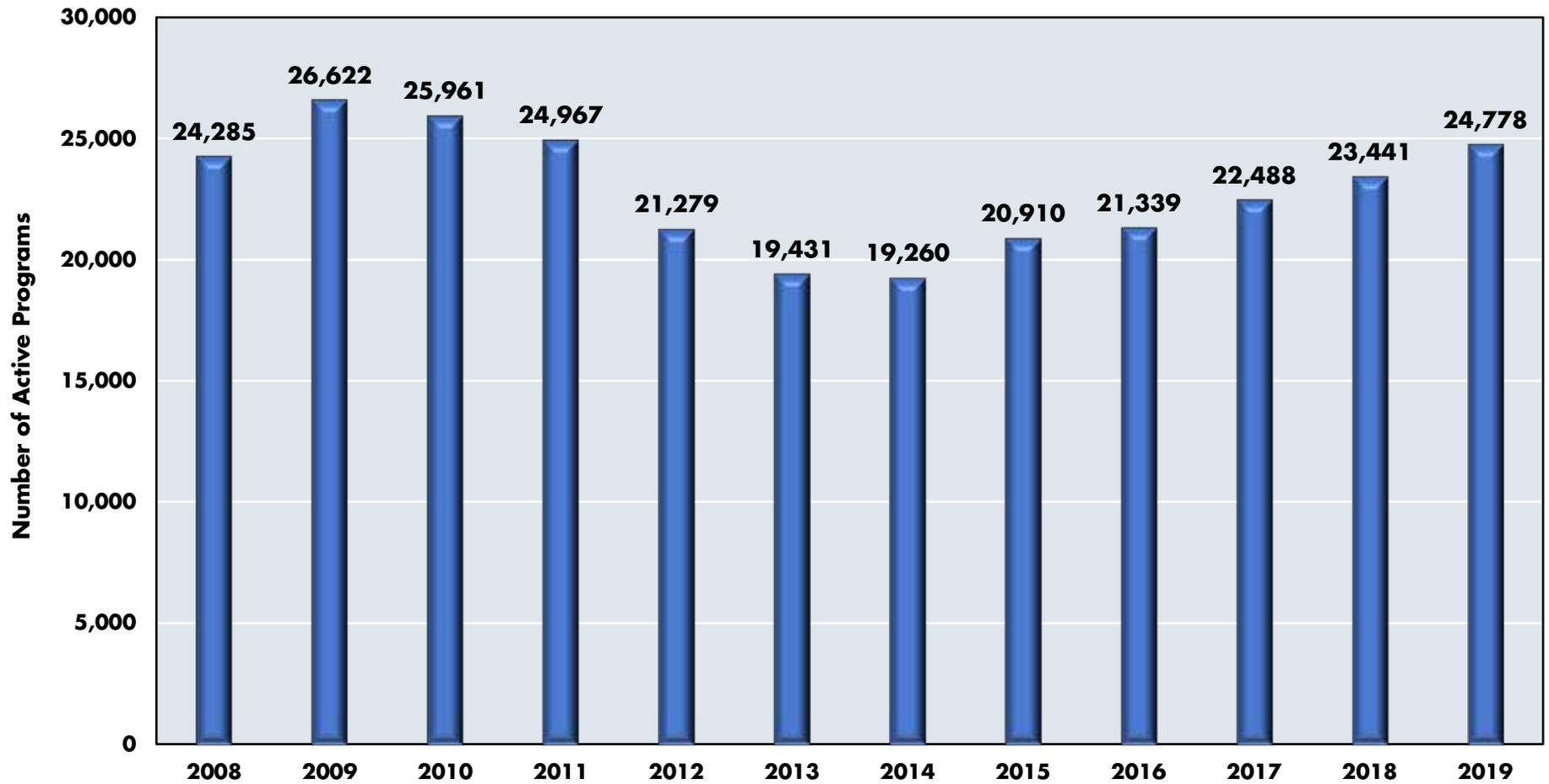


Sources: Department of Labor and U.S. Census Bureau

Note: Apprenticeship data are from the Labor Department and age breakdowns are from the Census Bureau's American Community Survey. In particular, according to the American Community Survey 5-year estimates, the number of 20-24-year-olds stood at 22,015,108 in 2019, or an average for each age of 4,403,021 people. Dividing the number of people entering apprenticeship programs in 2019 (252,271) by 4,403,021 equals about 5.7%. This approximates the size of a typical cohort entering the apprenticeship system.

GRAPH 3

ACTIVE APPRENTICESHIP PROGRAMS: UNITED STATES, 2008-2019



Source: Department of Labor

# A Closer Look At The Newport News Shipbuilding Apprentice School

In 2019, The Apprentice School at Newport News Shipbuilding (NNS) celebrated its 100th birthday. Since its inception, it has employed, educated and trained more than 10,000 tradespeople and evolved from a small trade school with three faculty members into a full-service academic institution housed in an 85,000-square-foot cutting-edge facility. It also serves as part of NNS's "leadership factory," with 14 alumni rising to the vice president level. William R. "Pat" Phillips Jr., a 1954 pipe designer graduate, became the 14th president of NNS in 1992, the first Apprentice School graduate who became CEO and president of Newport News Shipbuilding. He retired in 1995, after 46 years with NNS.

As we delve deeper into The Apprentice School, we will look at several features that make it unique. But first, we start with a general overview, highlighting some distinctive features before moving on to the school's culture and its vision for the future.

## OVERVIEW OF THE APPRENTICE SCHOOL

Similar to many higher education institutions, The Apprentice School offers athletics (six varsity teams in baseball, men's and women's basketball, football, golf and wrestling) and various student organizations as a complement to its academic instruction in the classroom. Recruiting takes place over a wide geographic area at both high schools and career fairs.

Peeling back the layers reveals several unique features in how the school operates. **First, starting cohorts are small, typically around 25 to 30 students each quarter. The number of apprentices ebbs and flows over time since enrollment depends on the employment needs at NNS.** Graph 4 gives a broad picture of enrollment and retention over the last decade. The total number enrolled has hovered around 800 annually. The number of terminations, an average of 80 per year, indicates

that advancing through the program isn't a cakewalk. Math is the most significant barrier to success on the academic side. Terminations due to math course failures, however, have been falling in recent years, owing to math remediation efforts and the introduction of night school.

**Second, the small cohort sizes also highlight another unique feature – small classes and close relationships with faculty.**

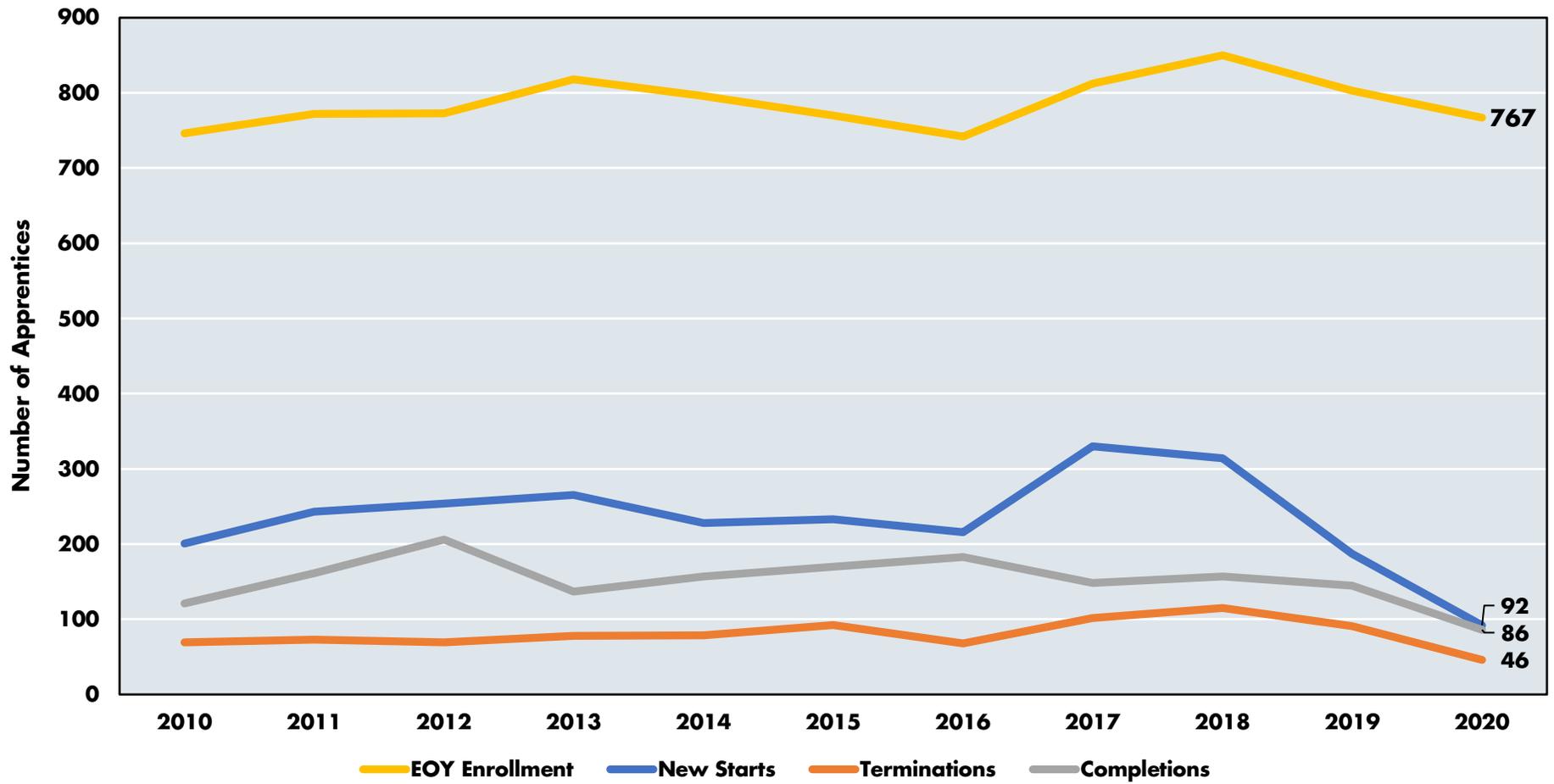
Graph 5 shows the breakdown of faculty and staff in 2019. The Apprentice School has 71 craft and 15 academic instructors, creating a close-knit learning environment. The academic instructors all have graduate degrees in their field, while the craft instructors are all Apprentice School graduates themselves.

**Third, admission to The Apprentice School is competitive – as competitive as the most elite Ivy League schools. The school receives upwards of 4,000 applications each year. Over the last decade, the largest number of new students to enroll each year was 330, while the low was 86, yielding acceptance rates between 2% and 8%.**

The varsity athletic teams account for around 55 of the open spots each year. To be considered for admission to The Apprentice School, applicants must be 18 or older and have a high school education. The admission process focuses on students with a hybrid of success in math and science courses as well as hands-on technical training experience. This tends to winnow down the applicant pool. Nonetheless, applicants with promise who are not admitted to The Apprentice School are encouraged to apply with NNS for general employment.

Similar to many community college student bodies, the average age of apprentices, 25, is older than that of typical undergraduates. This is due to many students entering the school after becoming unsatisfied with their early career trajectory. Graph 6 shows the student body makeup by race and gender. The Apprentice School student body reflects the demographics of many apprenticeship programs – primarily male (81%) and white (64%). However, those within the school note their continued efforts to diversify the student body. In 2020, 51 of the 767 (6.6%) students enrolled in The Apprentice School were veterans. Some even started out in the Navy on the waters near NNS and transitioned to school after separating from the military.

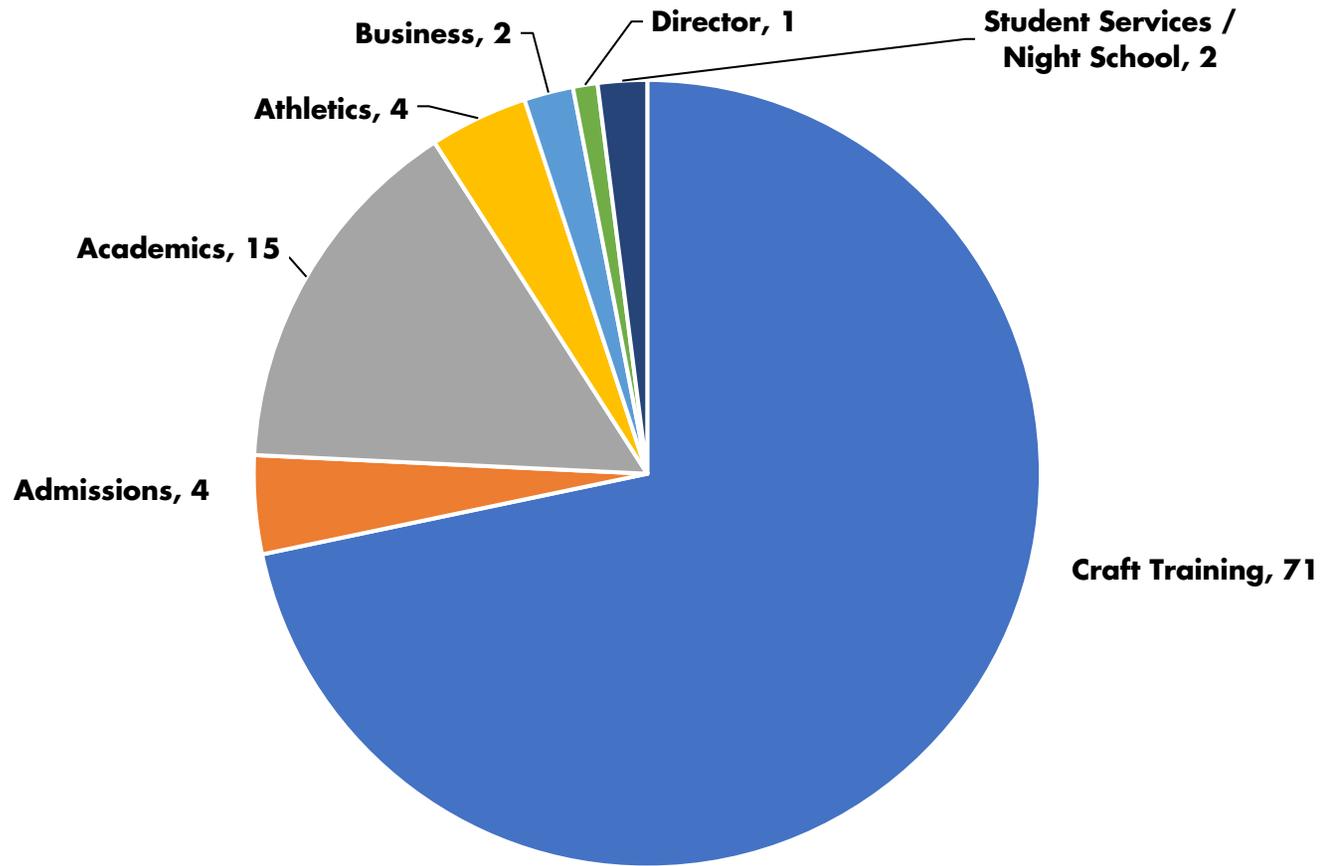
**GRAPH 4**  
**APPRENTICE SCHOOL ENROLLMENT AND RETENTION, 2010-2020**



Source: The Apprentice School

**GRAPH 5**

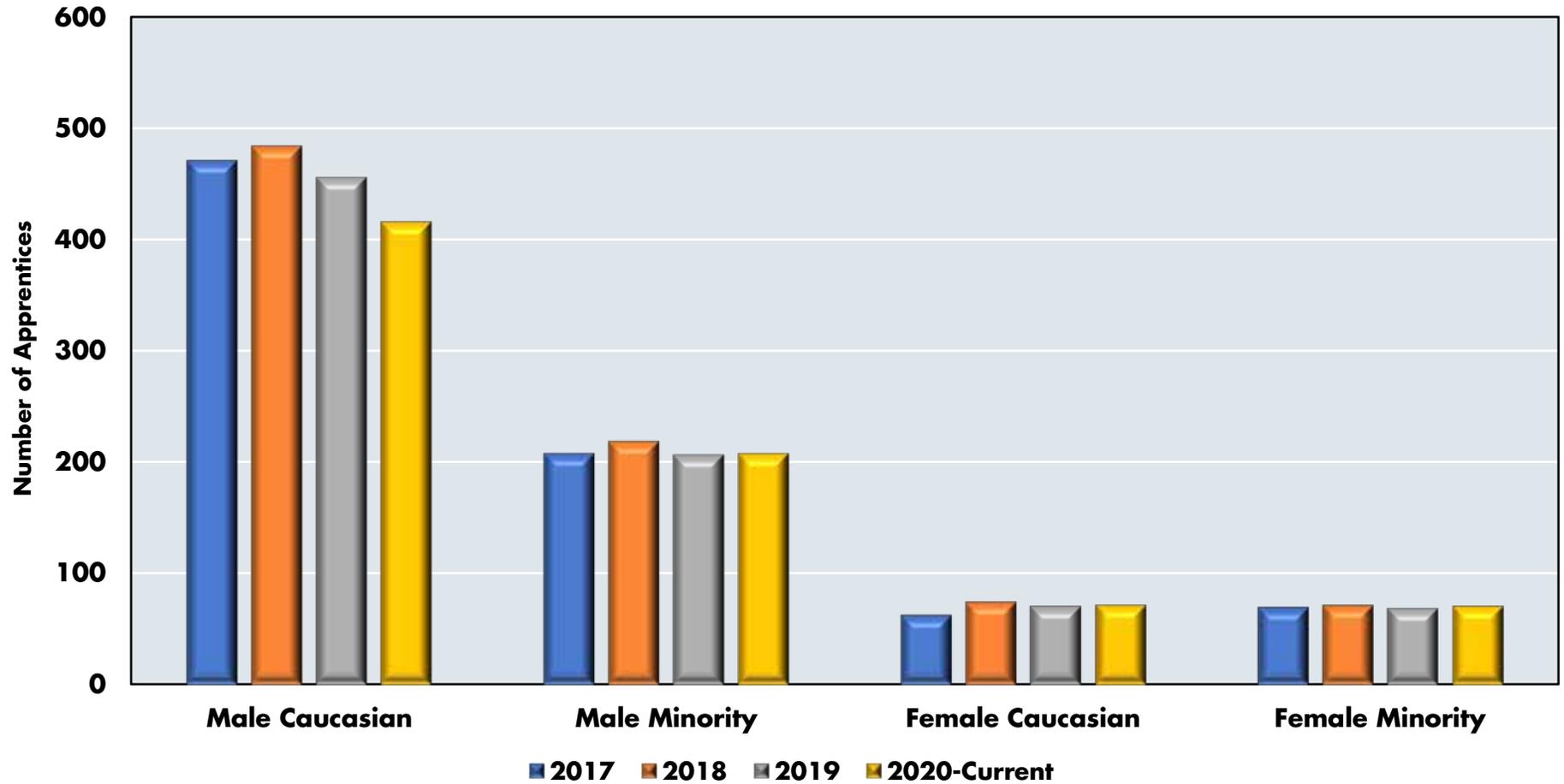
**FACULTY AND STAFF AT THE APPRENTICE SCHOOL, 2019**



Source: The Apprentice School

GRAPH 6

RACE AND GENDER OF STUDENTS ENROLLED AT THE APPRENTICE SCHOOL, 2017-2020



Source: The Apprentice School

**Fourth, The Apprentice School seamlessly ties theory to practice and practice to theory.** As a part of the school’s World Class Shipbuilder Curriculum (WCSC), students spend two days per week in the classroom, ultimately receiving approximately 1,000 hours of academic instruction (comparable to the requirements of many associate degree programs). This is coupled with 7,000 hours of hands-on training in various trades. As of April 2019, apprentices earn a Maritime Studies Certificate for completing the WCSC. Table 1 displays the academic portion of the training. Cynthia Lear, WCSC manager, highlights the practical applications of the classroom material and how it differs from that offered in traditional higher education:

“If you took a college geometry or trigonometry course you would be doing proofs, where ours is applied to what they are going to be seeing in the shipyard environment. So we make that relevant. A lot of our students are hands-on, so they need to know the relevancy of what they are learning in the classroom . . . when we start to look at and introduce mechanics and do statics and we look at forces on cranes,

things they are going to see in the shipyard. This helps solidify the content in the apprentice’s mind.

“In the Technical Mathematics II course, they are actually finding, for instance, volumes and surface areas of spherical tanks, which are shapes they would see in the shipyard. They may look at flow rates to see how long it takes to drain the tank or fill the tank using a certain-size pipe.”

Table 2 shows the range of trade disciplines offered at The Apprentice School. There are 19 shipbuilding disciplines with on-the-job training and mentoring. Apprentices who excel in the WCSC have the opportunity to pursue one of nine advanced fields. The advanced disciplines range from supply chain management apprentice to nuclear test technician. These disciplines couple on-the-job training with academic coursework in partnership with local higher education institutions. Apprentices can take classes at Thomas Nelson Community College toward an associate degree and at Old Dominion University for a bachelor’s degree in either engineering or modeling and simulation.

**TABLE 1  
WORLD-CLASS SHIPBUILDER CURRICULUM  
AT THE APPRENTICE SCHOOL**

Subject	Academic Terms			
	1	2	3	4
Technical Mathematics	Technical Mathematics I (3)	Technical Mathematics II (3)		
Drafting, Engineering and Design		Drafting (3)		Mechanics (3)
Marine Engineering and Naval Architecture		Ship Construction I (2)	Ship Construction II (3)	
Physical Science			Physical Science I (3)	Physical Science II (4)
Technical Communications	Technical Communications I (3)		Safestart (2)	
Business Processes	Introduction to Computers (3)		Business Operations and Leadership (3)	Problem Solving (4)

Source: The Apprentice School  
Note: Credit hours are in parentheses.

TABLE 2

## TRADE DISCIPLINES AT THE APPRENTICE SCHOOL

Shipbuilding Disciplines			
Coatings Specialist	Electrician	Heating and Air Conditioning Worker	Heavy Metal Fabricator
Insulator	Machinist	Maintenance Electrician	Maintenance Pipefitter
Millwright	Molder	Non-Destructive Tester	Outside Machinist
Patternmaker	Pipefitter	Rigger	Sheet Metal Worker
Shipfitter	Welder	Welding Equipment Repair	
Advanced Disciplines			
Advanced Shipyard Operations	Cost Estimator	Metrology Technician	Marine Designer
Modeling and Simulation	Nuclear Test Technician	Production Planner	Marine Engineer
Supply Chain Management			

Source: The Apprentice School

## APPRENTICE CULTURE

**“What’s different here?” trade instructor and 1988 Apprentice School graduate Stan Best asked rhetorically during a discussion about The Apprentice School. “We have 100 years of history. We get to stand on [many] shoulders, and it is really our job not to ruin it.”**

Latitia McCane, who came to The Apprentice School in 2018 as director of education after holding several community college leadership positions, also pointed to the importance of the school’s values in its overall success. Best and McCane are both referring to the culture and mindset that permeate the school. It’s a mindset of asking, “How I can help you?” – and one that values collaboration over competition, while also improving the bottom line.

School traditions transcend the age of the institution. One of them, says McCane, has to do with legacy. There are generations of families that send their children to train and learn there. It is not unheard of to have three generations of Apprentice School alumni working at NNS all at the same time. With that kind of legacy, one can easily see how loyalty runs deep.

This culture seems to be the driving force in the instructor-apprentice relationship. David Blunt, shipfitter craft instructor and 2008 graduate, commented, “My apprenticeship experience caused me to mature faster, put me in positions outside of my comfort zone and challenged me to make the best decisions possible. I have created lifelong bonds with other employees at The Apprentice School and throughout NNS who took me under their wing and showed me a multitude of ways to be successful while meeting customer demands.”<sup>5</sup>

Trade instructor Jacob Johnston, welder/non-destructive test inspector/craft instructor, class of 2006, notes: “Being a craft instructor allows me to train and pass on my knowledge to apprentices in Welding School and trade theory courses. The role also allows me to watch them grow as individuals and become successful in their trade and with the company. By developing trade and leadership skills in apprentices, we demonstrate our commitment to the company while continuing to help the school grow.”<sup>6</sup>

According to James Adkins, a Frontline FAST electrician apprentice, apprentices experience the benefits of collaboration firsthand – a departure

<sup>5</sup> From the 2016 Apprentice School Annual Report.

<sup>6</sup> From the 2016 Apprentice School Annual Report.

from the survival-of-the fittest-style competition endemic in higher education. “Apprentices often collaborate through the sharing of ideas and previous experiences while working together on jobs,” he said. “This promotes growth among apprentices and helps the company save money by reducing man-hours spent on rework and downtime. This same collaboration helps to increase the quality of our product delivered to the U.S. Navy.”<sup>7</sup>

**Retaining graduates is one of the key ways the culture cultivated at The Apprentice School helps the bottom line. Apprentices are compensated for their work in the trades as well as their time in the classroom. However, they do not have an obligation to stay with NNS after graduation. Nevertheless, 80% of Apprentice School graduates remain with the company for at least 10 years.**

#### INNOVATION AND THE FUTURE OF THE APPRENTICE SCHOOL

Despite The Apprentice School’s long history and prominence at NNS, it is not resting on its laurels. Instead, it is pushing forward on several initiatives to help keep its future bright. For instance, the school has recently made strides in virtual delivery. The COVID-19 pandemic served to accelerate a process underway to bring academic training online. Furthermore, through two different grants, the school created a virtual technical training lab, dubbed the Innovation Room, for welding, machine tool technology and other disciplines. The aim is to take the Innovation Room to career fairs and give prospective students a hands-on feel for the apprentice training experience.

**Since receiving approval last year to grant academic degrees, the school will soon be awarding Associate of Applied Science degrees in maritime technology in 26 disciplines, including maintenance electrician, marine designer, nuclear test technician, and modeling and simulation program analyst. Granting academic degrees is a significant move for the school as an educational institution and enhances its national reputation as a model apprenticeship program.**

<sup>7</sup> From the 2016 Apprentice School Annual Report.

Historically, The Apprentice School offered a hybrid program. Approximately 20% of apprentices qualified to earn an associate degree from Thomas Nelson Community College. Some of these students then transitioned to ODU to complete studies for a bachelor’s degree in engineering or modeling and simulation. However, the remaining 80% of the apprentices struggled to move into leadership positions that require at least an associate degree. The Apprentice School’s recent authorization to award associate degrees as a part of its curriculum provides an avenue for upward mobility, as graduates embark on their careers.

**Xavier Beale, Newport News Shipbuilding’s vice president of trades, puts it best: “Our ability to offer academic degrees deepens our commitment to workforce development and will open new opportunities for our company to help to meet the ever-growing demand for skilled workers in our region.”<sup>8</sup>**

While the move to confer academic degrees pushes The Apprentice School further down the educational pipeline, it is also reaching back with its pre-apprenticeship program. The idea underpinning this program is to provide mentoring, math enrichment and an introduction to soft job skills, like leadership, while also exposing students to the craft trades. The program started in fall 2019 with 11 students at the New Horizons Career and Technical Education Center. Of the 11 students in the program, seven went on to The Apprentice School, three took jobs at NNS (a division of Huntington Ingalls Industries) due to insufficient math skills, and one student opted to enroll at a traditional four-year college.

After the pilot program’s success at New Horizons, The Apprentice School is expanding its pre-apprenticeship program to more schools. It’s part of a broader effort to build a pipeline of talent for skilled-trade jobs, and the program is open to high school students whether or not they plan to go on to The Apprentice School. **The long-term goal is admirable: take students starting ninth grade and let them finish the academic portion of the WCSC while in high school, then follow up with on-the-job craft training, and ultimately award an associate degree.**

<sup>8</sup> <https://newsroom.huntingtoningalls.com/releases/photo-release-the-apprentice-school-at-newport-news-shipbuilding-approved-as-an-institution-of-higher-education>.

The Apprentice School at NNS holds a unique place at the intersection of higher education and the workplace. The school often touts how it is “accelerating the time to talent” for its students. For example, Apprentice School alumni are helping spearhead the shipyard’s transition to high-tech initiatives, like integrated digital shipbuilding. Furthermore, many graduates are quickly moving up the ranks to become foremen. This is particularly important because the shipyard, flush with both young employees and longtime workers, has developed a gap in the middle of the workforce pipeline. Despite its many successes, however, The Apprentice School still faces challenges in some areas. For example, it has struggled to recruit and train women. However, the school is taking steps to change this. With the help of a U.S. Department of Labor grant, The Apprentice School is partnering with education, research, business and advocacy groups to come up with practical tools to increase enrollment among minorities and women. The school also plans to use its pre-apprenticeship program to engage females early in the trades.

## Summing Up

The Apprentice School clearly operates at a high level, which prompts us to ask: What lessons can we learn from its success? Can its model be replicated and scaled? In light of these questions, we provide some final thoughts on expanding apprenticeship opportunities in Hampton Roads.

**The Apprentice School provides a local “proof of concept” that apprenticeship programs can work well, especially if there is a strong relationship with an employer.** When a program is done right, it yields a host of benefits to both employers and employees. However, sometimes the net benefits are difficult to quantify. Newport News Shipbuilding strongly believes in the efficacy of The Apprentice School, despite not having a rigorous, formal cost-benefit evaluation process in place. A recent report by researchers at Case Western Reserve University and the U.S. Department of Commerce provides some insight as to why they are so confident. The researchers looked carefully at several employer-led apprenticeship programs, including health care system Dartmouth-Hitchcock and manufacturing firm

Siemens USA, and found an internal rate of return of an astoundingly high 40% to 50%.<sup>9</sup>

**The Apprentice School’s track record spans a century. It has survived the test of time because of its ability to adapt and evolve.** This is both a promising and cautionary tale for others. Both policy makers and firms should develop apprenticeship programs that are nimble and can adjust to a changing economic environment.

**Apprenticeships, especially those in the trades, can help address workforce gaps by supplying young employees.** The Apprentice Institute at Tidewater Community College is a useful step forward for Hampton Roads. Linking apprenticeship programs with high schools also holds significant promise, but would require regional collaboration regarding workforce needs. Further, there are promising opportunities as well outside the trades, as the service sector continues to grow. For example, Hampton Roads’ medical institutions could establish an apprenticeship program for health care workers.

Unfortunately, expanding apprenticeship opportunities likely won’t come easy. As the saying goes, “Culture eats strategy (and policy) for breakfast.” At the firm level, The Apprentice School has a 100-year legacy and a culture that has evolved and strengthened over time. Huntington Ingalls’ sister shipyard in Pascagoula, Mississippi, which also has an apprenticeship program, would love to have the same level of success.

The broader culture around apprenticeships can also act as a stumbling block to both future applicants and firms. There is a perception that apprenticeships are only for the trades. Parents often view apprenticeship programs as a less-desired option for their children, when compared to a college education, and are unaware that many such programs provide a pathway to a baccalaureate degree. Meanwhile, inexperienced firms are wary of taking on the regulatory burden of registering an apprenticeship program. Finding ways to change some of these cultural attitudes is crucial to expanding apprenticeships in the region. We believe making such an effort is worthwhile.

<sup>9</sup> Susan Helper, Ryan Noonan, Jessica R. Nicholson and David Langdon, “The Benefits and Costs of Apprenticeships: A Business Perspective,” U.S. Department of Commerce (2016), <https://files.eric.ed.gov/fulltext/ED572260.pdf>.