

PLTW

# SMALL SCHOOL, LARGE IMPACT

WASHINGTON HIGH SCHOOL  
WASHINGTON, IN



COMPUTER SCIENCE ENGINEERING BIOMEDICAL SCIENCE COMPUTER SCIENCE ENGINEERING BIOMEDICAL



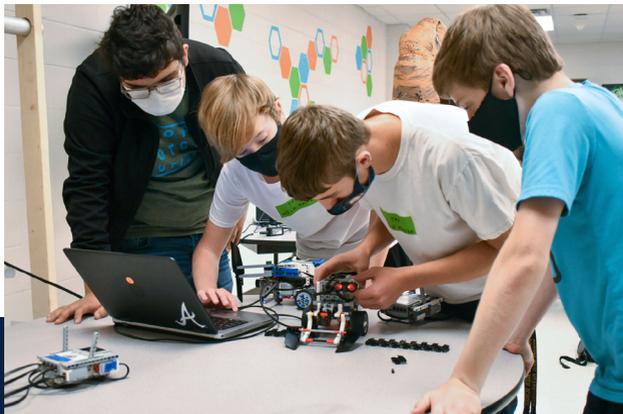
## Small School, Large Impact

*Project Lead The Way (PLTW) students have a competitive advantage when continuing their studies in college and entering the workforce.<sup>1</sup>*

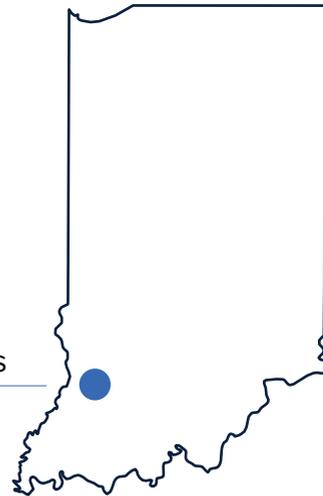
While relatively small in size, Washington High School (WHS) is **big in impact**. Located in rural Indiana, this public school serves approximately **750 students** in 9th-12th grade and aims to **prepare ALL students for success** after high school.

Regardless of whether students plan to begin their career immediately after high school or after graduating from college, all students have the opportunity to learn about and **explore different career options**, and **discover which option is right for them**. This is not easy to accomplish in a rural area.

Despite challenges like smaller talent pools and not being located near large industry partners, **WHS made career awareness possible** and is **creating opportunities** for students through its College & Career Academy model.



**750** students  
Washington H.S.  
Washington, IN



## By the Numbers

Career education prepares students for success after high school. Dougherty (2016) found that taking **just one extra career and technical education (CTE) course** beyond the average increases a student's probability of graduating from high school by **3.2 percentage** points and enrolling in a two-year college the subsequent year by **.6 percentage** points. The probability of being employed the year after graduation increases by **1.5 percentage** points and raises the student's expected quarterly wage by **approximately 3 percent**.

Enrollment in an **information technology focused career academy** increased the likelihood of high school graduation by **approximately 8 percentage points**. (Hemelt, Lenard, & Paepflow, 2019)

<sup>1</sup>) PLTW students attended Texas higher education institutions at a higher rate than matched non-PLTW students. PLTW participation has a positive effect on student performance on standardized mathematics tests in high school. For those students who did not enroll in college, PLTW students' median wage was 13.6 percent more than peers. (Van Overschelde, 2013)

Participation in PLTW courses increased the likelihood that a student would enroll in a STEM major at the post-secondary level. And students who participated in more PLTW courses were proportionately more likely to pursue a STEM major. (Pike, 2019)



## Washington High School Overview

**58%** qualify for free or reduced-price meals



**8%** are English Learners



**24%** receive special education services



**30%** are students of color



(Indiana Department of Education, 2021)

Washington High School College and Career Academy has **15 major career clusters** organized into **three different schools**—School of Applied Science & Technology; School of Health, Human & Social Services; and School of Arts, Business and Communication. All students follow the graduation pathway model and can take classes developed for these careers. To fulfill the school’s need for career skills development and work readiness training for students, many of the classes utilize curriculum developed by **PLTW**.

By engaging students in **hands-on activities, projects, and problems**, PLTW empowers students to solve **real-world challenges** and inspires them to reimagine how they see themselves. PLTW students develop **transportable skills** (i.e., communication, collaboration, problem solving, critical thinking, and ethical reasoning) that are **highly valued** in society at every career stage. WHS is enhancing PLTW’s hands-on, real-world learning experiences by **connecting students with employers** – bringing in employers as guest speakers and teachers, and providing opportunities for students to complete authentic projects with industry partners.



Problem Solving



Critical and Creative Thinking



Collaboration



Communication



Ethical Reasoning and Mindset

Transportable and Technical Skills

WHS currently offers all three PLTW High School pathways.



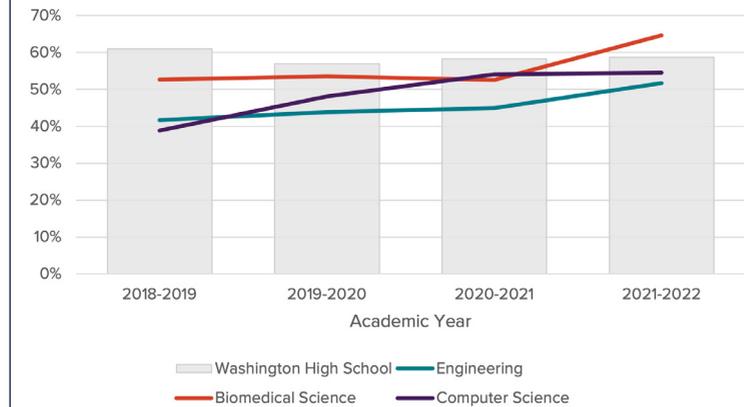
*Transportable skills are among the most desired skills in the workforce.*

**85%**

of all industries seek at least one of these skills when hiring new employees

(Burning Glass, 2019)

**Percentage of Students Eligible for Free/Reduced Price Lunch**



## PLTW in Action: Leaving the Community in Awe

Students in PLTW pathways say that there is a day or two of instruction and then they are “**turned loose**” with a project, such as building fan-powered vehicles or coding holiday lights to flash in time to music. “**Coming together to find solutions,**” “**trial and error,**” and “**hands-on**” are a few of the phrases used by students to illustrate their experiences in PLTW classes.

**Teamwork is key.** Students report that they must **build trust** and **learn to rely** on each other. Teachers operate as facilitators, while students develop an appreciation for diversity of thought, recognize that there is often more than one way to solve a problem, and work together to find solutions. As stated by a 12th grade PLTW student, “[We] **have different thought processes. Maybe yours didn’t work, but someone else’s did — you come together and easily find a solution.**”



*All of the skills I have gained in those aspects (collaboration, critical thinking, problem solving) come 100% from PLTW classes. In a traditional classroom, [students] don’t get as much time collaborating with others. Without the PLTW classes, I would not be where I am now with being able to collaborate and solve problems.”*

- WHS graduate

The outcome of this approach leaves the **entire community in awe**. Take the annual Christmas Lights Show, for example. PLTW Computer Science students **design the show** and **code the holiday lights** in time to holiday music. Students in the industrial technology course build structures to hold the lights and some of the songs are performed by choir and band students. This annual event, done in partnership with the city of Washington, allows students to **gain valuable technical and transportable skills** in a way that the **entire community** can celebrate.

PLTW students at WHS report **feeling proud** of their perseverance, the **problems they solve**, and the **work they produce**. This pride has contributed to students’ increased **interest and confidence in STEM**, as evidenced by WHS **adding two AP Computer Science classes** to accommodate **student demand**. It is also evident in the career paths that graduates have selected, including chemical engineering and manufacturing. Additionally, **students gain key transportable skills**, such as collaboration, communication and problem solving, that industry partners indicate are necessary for success.

**According to 2021 WHS PLTW Student Survey:**

**71%**

reported increased problem-solving skills due to PLTW experience

**89%**

reported increased technology skills after taking PLTW courses



## Connecting Students to Industry

WHS deepens students' PLTW experiences by providing them opportunities to **apply their skills** in **real-world, work-based learning**. The school is able to offer these opportunities by focusing on the resources available to them and **utilizing partners and programs** that are already in place. Steve Peterson, principal of WHS, explained that these connections with employers "give kids experience with a series of community partnership project-based learning experiences, so they [students] can take time to work on a real project with people in the industry." Together with industry partners, school staff creatively develop **meaningful and authentic experiences** and projects for students.

During the 2020-21 academic year, the school partnered with **Naval Surface Warfare Center, Crane Division** (NSWC Crane) to have three PhD-level, subject matter experts teach PLTW Computer Science and Cybersecurity students for a full week and **engage them in interactive problem sets**.

*Crane was here last year. My son was so excited about that. One group worked with Crane to make security and another group worked with Crane to hack it."*

*- Parent of two WHS PLTW graduates*



*Crane is such a huge piece of southwest Indiana. But, if they don't have a family member working at Crane, a lot of youth don't understand what exists there. When they shared what they do, it opened up eyes and ears. Students don't have to go to California to the Tech Valley or big city. They have an opportunity here to stay in southwest Indiana close to family. If they pursue a computer science or engineering degree, there are lots of opportunities."*

*- Kevin Frank, Assistant Superintendent of WHS*

Additionally, through its long-standing partnership with **Daviess Community Hospital (DCH)**, WHS organized an eight-week long **workplace simulation project** for its PLTW Biomedical Science students. Industry professionals from DCH **worked alongside students as mentors**, while students learned about infectious disease and created a public health communication plan to share with hospital staff. As part of the project, students also toured the hospital, learned about **various healthcare careers**, and attended a **panel discussion** with hospital staff.

"Career opportunities like these are important because there is more to the hospital than just doctors and nurses. It helps students understand that there are hundreds of different types of jobs and careers in the medical field that they can pursue," stated Frank.

## Community Connections



## Transforming Communities

Transformative learning experiences provided by PLTW programs and work-based learning opportunities **benefit more than just the students**. WHS teachers report that universities **now reach out to them to recruit students**. Parents appreciate that their students can narrow down **potential college majors** and **career choices** while gaining real-world experience. Students develop **technical and transportable skills**, and employers gain access to potential future employees who will ultimately be equipped with the skills **necessary for success** at their organizations.

Angie Mann, NSWC Crane's Engagement and Strategy Lead for the Trusted Microelectronics Division, and Angie Steiner, Director of Outreach Services at DCH, **identify communication, collaboration, and problem-solving** among the transportable skills that **their companies value**. Furthermore, Angie Mann hopes that their partnership with WHS will **spark students' interest** in NSWC Crane and help to **establish a workforce pipeline**. By pairing PLTW programming with work-based learning opportunities, WHS is creating a program that makes learning experiences relevant and purposeful for **ALL students** by building connections between school and careers.



*Everything I have done in these classes is what I will be doing in my job. It's great to be able to get into the right mindset for my soon to be job site. It definitely keeps me excited about what I plan on doing."*

*- 12th grade PLTW Student*



*Collaboration, ability to communicate, and ability to present ... technical [skill] is a given, the others are a neat package that are a must."*

*- Angie Mann, NSWC Crane's Engagement and Strategy Lead for the Trusted Microelectronics Division*



# PLTW

**Empowering students to thrive in an evolving world**



**Click or scan QR code to  
see more WHS data!**

**[pltw.org/impact](https://pltw.org/impact)**

