

CREATING TOMORROW'S CODERS



PLTW

Addressing the Gap

According to the Bureau of Labor Statistics (2022), “overall employment in computer and information technology occupations is projected to grow 15 percent from 2021 to 2031, much faster than the average for all occupations; this increase is expected to result in about 682,800 new jobs over the decade.” **Recognizing the need for well-trained and experienced computer scientists over ten years ago, Oracle Cerner created the Oracle Cerner Scholars Experience.**

Chase Mills, an Oracle Cerner employee, described it as a chance to, “reach out to the schools and the area and be able to give each of the high school students an opportunity to...[get] some hands-on experience.”

The Oracle Cerner Scholars Experience

The Oracle Cerner Scholars Experience is a community-based effort that **connects industry to local schools with the goal of providing a robust career-based learning** opportunity for Kansas City high school students interested in the computer sciences. The success of this program in Kansas City has allowed Oracle Cerner to expand to other parts of the country.

Employment in Computer and Information Technology Occupations



Over 10 years of impact across seven sites with 29 scholars in Fall 2022

Oracle Cerner Scholars collaborate with various teams within the company to not only gain technical and transportable skills, but also to get a sense of the career and educational opportunities available to them after they graduate. Many students get their start by taking Project Lead the Way (PLTW) courses. **PLTW provides students with the foundation they need** to enter the Oracle Cerner Scholars Experience by inspiring interest, teaching transportable and technical skills, and empowering students to succeed. Students then build upon their foundational skills during their time at Oracle Cerner. The combination of PLTW and the Oracle Cerner Scholars Experience leaves a clear impact on the students and the community, which can be seen in students' stories.



At Cerner, we're striving to build a brighter future by interacting with parents, students, and educators to inspire STEM education through a wide variety of activities."

- Oracle Cerner

```

1 public class Hello
2 {
3     public static void Main(String[] args)
4     {
5         System.out.println("Hello, PLTW! I fixed the 4 errors!")
6     }
7 }
8

```

Harold Burgos, who is a PLTW graduate, former Oracle Cerner Scholar and intern, and now a current Oracle Cerner employee, said, “Both the [Oracle Cerner Scholars Experience] and the

PLTW courses gave me the best of both worlds...how can I go about interviewing, solving issues, having ideas, working together, communication, and being able to be in a corporate environment.” As Harold said, he got to this point first with PLTW providing the foundation, then connecting to industry at Oracle Cerner, which all culminated in long lasting impacts for not only himself but the community as well.



“PLTW gives them a lot of the technical skills they need.”

- Stanley Weeks,
Former PLTW Teacher/
Current IT Professionals
Instructor

Step One: Laying the Foundation

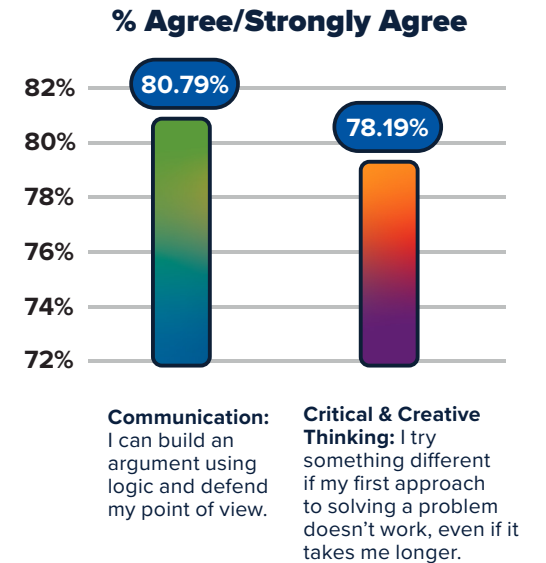
One school administrator **identified PLTW as the origin of student success** in opportunities like the Oracle Cerner Scholars Experience: “Speaking specifically to PLTW, we wouldn’t be able to push our students through these opportunities if they weren’t set up for success in the classroom, and I think PLTW does a lot of that support for us and that’s really key.” Chase

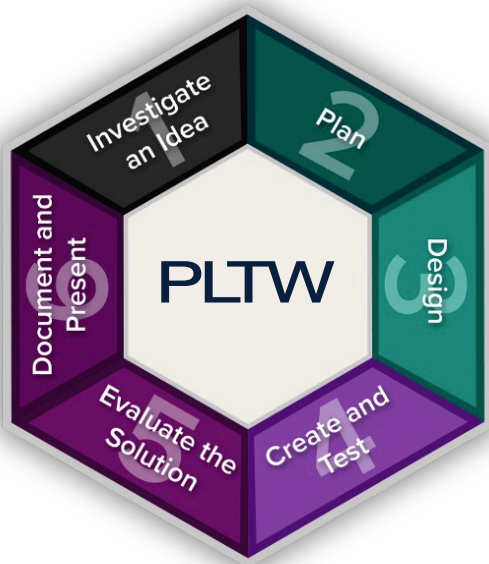
Mills furthered that notion by saying, “I feel like [PLTW students] were more equipped.”

PLTW does this by **providing the foundational skills students need to succeed**. Through the activity-, project-, and problem-based curriculum, PLTW students gain universally important transportable skills such as collaboration, communication, critical thinking, and problem-solving, while also learning relevant technical skills like fundamental coding principles and languages. Students engage in authentic career preparation by selecting the problems they choose to solve and **by using the same tools and practices as computer science professionals**. This can take different shapes in different PLTW courses, such as defending data in Cybersecurity, creating solutions using Python in Computer Science Essentials and Computer Science Principles, or Java in Computer Science - A.

Harold Burgos reminisced on completing course projects like designing, building, and

In a 2021-2022 national survey of PLTW students that completed End of Course Assessments, computer science students reported having strong communication and critical and creative thinking skills.





coding a small elevator with a partner as providing these foundational skills while also being “one of the big things that [he] never could forget.” Other Oracle Cerner Scholars indicated that their PLTW courses provided them with an introduction to the basics of coding, as well as a strong understanding of the process required to go from an idea to a product. Harold summed up PLTW well when he said, **“It’s definitely impacting a lot of students like me.”**

PLTW allows students to not only learn the skills they need but also to begin exploring their career interests. As described by Stanley

Weeks, a former PLTW teacher and current IT professionals instructor, “PLTW helps lay [the] foundation to help those students figure out what they want to do.” All of which is built upon during the Oracle Cerner Scholars Experience.



The [Oracle Cerner Scholar Experience] itself has been huge...it gets kids exposed to life at [Oracle] Cerner...it’s exposed kids to different careers.”

– Raz Concepcion, PLTW Computer Science Teacher

Step Two: Connecting to Industry

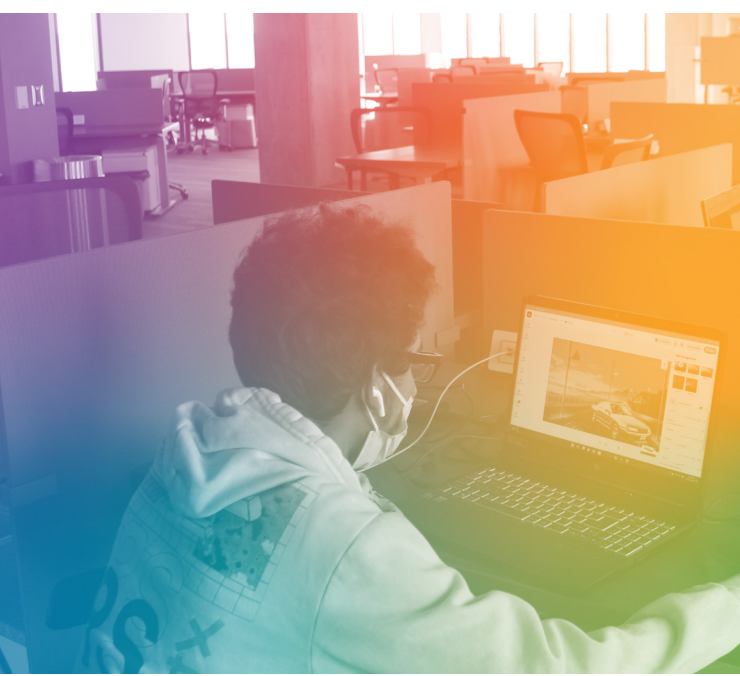
PLTW lays the foundation. Oracle Cerner gives them the experiences needed to build upon and solidify what they have gained in the classroom. **Furthermore, this program fits well with the current generation.** According to the National Society of High School Scholars (2022), computer science is among the top ten expected career paths for Generation Z and 82 percent of students surveyed indicated they plan to participate in an internship to develop skills and explore their interests. A former Oracle Cerner Scholar alluded to this when they said, “This is definitely something of a passion for me, working with computers, and just being able to see what it would be like in the workforce definitely made it more comforting.”

Scholars were able to expand on the transportable and technical skills they gained through their PLTW courses during their Oracle Cerner Scholar



[It’s important to] have our students partake in real-world learning that [is] inclusive of an internship opportunity, for our students to really get in touch with what industry [is] asking our students to learn.”

– School Administrator



Experience. For example, **Scholars strengthened their collaboration, communication, and problem-solving skills** by working with Oracle Cerner employees to discover the best solutions to their tasks and projects. One Scholar also learned the importance of asking for help: “I struggled asking for help very early on because I thought it was a sign of weakness, but I got to learn early on that’s not really the case.”

The Oracle Cerner Scholar Experience not only enhanced transportable skills but taught technical skills, too. Scholars

were tasked with working on software for medical professionals, working in databases or Excel, debugging and fixing code, or maintaining and fixing hardware. Many Scholars also gained an essential understanding of GitHub, the universally desired technical skill that one Oracle Cerner employee described as giving Oracle Cerner Scholars a “leg up” by transferring to any career in software. A former Scholar described this strengthening of skills by saying, “There’s a lot of valuable experience that you get from being hands-on in an actual work environment.”



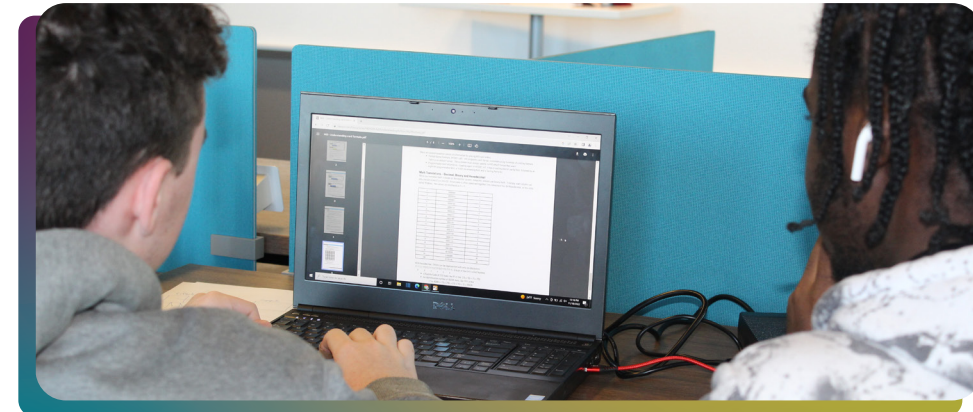
GitHub is “[t]he complete developer platform to build, scale, and deliver secure software.” (GitHub, 2022).



Oracle Cerner strives for development of skilled, engaged diverse students to participate in this experience. Oracle Cerner leverages an environment that is conducive to having students feel fully engaged so that they feel safe, they belong, and they matter.” – Mandy Nickell, Oracle Cerner Employee

Step Three: Lasting Impacts

After completing the Oracle Cerner Scholars Experience, **students leave feeling more confident and more sure of their future career paths**. One Scholar stated, “If I hadn’t... done this internship then I wouldn’t think I’d be as confident as I am right now actually applying for other internships or careers,” and, another said, “Once I got into the [Oracle Cerner Scholars Experience] ...I decided IT engineering is where I wanted to go.” However,



the impact on students goes beyond confidence and career choice; it can **spark long lasting passion for the industry** and a desire to give back to, and impact, their communities. For example, Harold Burgos now not only works at Oracle Cerner, but has also been inspired to give back to his community by going to schools to talk about his work. Burgos also leads students through coding activities to spark early interest in computer science, which he considers critical for younger students.

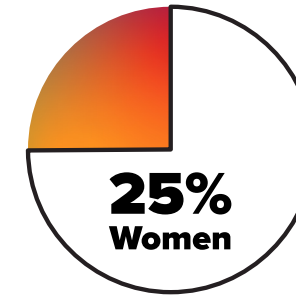
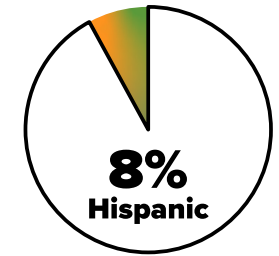
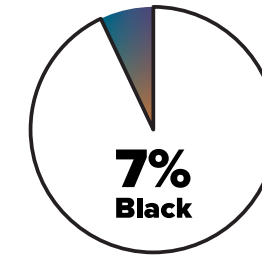
Research indicates the Oracle Cerner Scholars are not alone. Internships help students build more confidence in their abilities and make clearer decisions about their future endeavors. Students can also gain real workplace experience, build relevant skills, develop professional networks, and form connections with their mentors (Bennett, 2007; Kim, 2021). **There are also long-term benefits and impacts for the industry partner.** Mentors can feel an immense privilege from guiding students towards their career goals and seeing



Having young kids that have some energy participating with the teams brings a morale boost...[and] helped my engineers get a fuller, better understanding of the system because they had to explain it."

– Jon Fewins, Oracle Cerner Employee

Black and Hispanic individuals are highly underrepresented in the computer-related workforce making up only 7% and 8%, respectively (Pew Research Center, 2021).



Women account for only 25% of individuals employed in computer-related careers

(Pew Research Center, 2021).

their passion for the work (Kim, 2021). This can be seen in the experiences of Oracle Cerner employees. Both Travis Augustine and Jon Fewins described the **students as providing a morale boost** to the Oracle Cerner employees with their energy and passion. Travis put it simply by saying, "It was fun!" Moreover, Chase Mills added that the program allows Oracle Cerner employees to, "Get some mentoring in and understand how that works to actually share the knowledge that they've gained over time with another individual and that also helps them learn at the same time."



It's just making sure that we show [students], 'you deserve to be in these places too.'

– District Administrator

Two administrators from a participating district described the impact of the Oracle Cerner Scholars Experience as **showing students that they belong in these spaces** and that they, too, can succeed at something they may have previously considered intimidating or unrealistic. This is particularly important

for traditionally underrepresented students (Murillo, Quartz, & Del Razo, 2017). One of the administrators described it as beneficial for, “our students of color and our young ladies. Being able to be engaged in an opportunity, and also industries that they are not represented [in]...is powerful.”

The Oracle Cerner Scholars Experience’s goal, according to Mandy Nickell, an Oracle Cerner Employee, is to “partner with our local education partners



allowing students with a diverse background to experience real-world learning opportunities,” and it has succeeded in reaching that goal. **The Oracle Cerner Scholars Experience has had, and will continue to have, lasting impacts on the Scholars**, Oracle Cerner, the community of the Kansas City area, and beyond in new sites like those in Pennsylvania.

Scholars have been able to gain valuable experience that has enhanced the skills they learned



The local community, one, sees that as an opportunity for the student to be involved in something... [that will] give them exposure to what they can do in the future. And then, two, those students, once they go off to college, they might want to come back and stay local, which is even better for the city and the community.” – Harold Burgos

in their PLTW courses. It has prepared them for college and careers in computer science. And it has benefited the community by creating a well-developed workforce pipeline to high-quality jobs in the ever-growing computer science industry. **Thus, creating tomorrow's coders.**



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PLTW

Empowering students to thrive in an evolving world

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