

“ As a senior in high school, I've been going around looking at all these different colleges, and walking through the biology departments, and I will be with my parents and I will look up at the walls and see all these posters about their human physiology experiments. I can look at my parents and point up there and whisper to them, **'I can do that. I've done that before.'** ”

- *Ben Moreno, PLTW Biomedical Science Student*

Health & Science High School | Beaverton, Oregon





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# Health and Science School 'leads the way'

**Teacher Jeffrey Crapper and his students will present at a STEM conference in Florida.**



Inside a storage area attached to Jeffrey Crapper's biology and health classroom at Beaverton Health and Science School, Mazin Ashfaq waits for his computer software to load.

The software is for the school's motion-sensing cameras, which can track and code human movements, and provide data for projects as diverse as helping athletes recover and creating lifelike video games.

Ashfaq, a senior at Beaverton Health and Science School (also known as

HS2), studies the screen as his classmate Jane Hang waves a wand with camera-attracting markers at the end of it. The markers will help the computer identify the space it should be mapping.



Once Hang's job is complete, fellow senior Jennifer Meier jumps in, wearing a motion-capture suit with markers on it. Onscreen, the computer uses the markers to find and map Meier's form.

This informal presentation is happening in a storage area — but later this month, HS2 students and Crapper will show it onstage at the PLTW Summit in Orlando, Fla.

"Onstage, I'll be in the motion-capture suit," Meier said. "I'll be doing box jumps on that thing" — she points a stool — "and I know if you do certain movements in the suit, Mr. Crapper was telling me, it can tell if you're more prone to ACL tears. So it can really help athletes."

PLTW, which stands for Project Lead the Way, is a national non-profit that provides interactive curriculum for STEM (science, technology, engineering and math) projects in K-12 schools. HS2 has offered PLTW programs since 2008, and has since received official certification from the organization. The school now offers three different PLTW tracks: biomedical, engineering and

computer science.



From Oct. 22 through Oct. 25, PLTW will hold its annual summit, where leaders in STEM education will meet to share ideas and present their findings. Crapper will take part in several presentations, and his students will help operate the motion-sensor cameras in one of them.

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"They're going to demonstrate all the things we can do with these cameras," said Ashfaq. "With these cameras, you can show how an injury happens, and if someone gets tackled, what happens to their body, things like that."

Students at HS2 first got to use the cameras and software late last year, meaning this year's group of seniors are the first class to master them. Ashfaq, who will attend Oregon Institute of Technology next year and hopes to be a surgeon one day, said that the quality of education at HS2 has improved as the school incorporates more PLTW curriculum and state-of-the-art technology into its classrooms.

"The PLTW exposes you to a lot of different fields," he said. "In a class you'll see, all the students are really involved. The teacher isn't talking nonstop."

His classmate Hang agreed.

"They worked really, really hard to bring this program to light," said Hang, who is in both the biomedical and engineering track, and plans to be a pediatrician. "And through Mr. Crapper, we got all these nice things."

When they aren't busy preparing and presenting, Crapper's students will take advantage of their time at the PLTW summit by networking.

"Once we get to the summit, we want to show everyone what a state-of-the-art program this is, and make things better for those that come after us," Hang said.

They'll also take a little time to enjoy themselves: "I think we were talking about Disney World or Universal Studios," Meier said.



## **Blair Stenvick**

Reporter

971-204-7744

email: [bstenvick@pamplincorp.com](mailto:bstenvick@pamplincorp.com)

*Health & Science School's TVF&R Career Exploration Program introduces high school students to the roles and responsibilities of the fire service. Students meet at TVF&R's North Operating Center in Aloha once a month. Each meeting begins with 30 minutes of physical training, then a lesson led by TVF&R personnel: topics range from emergency medicine to home fire safety to managing stress and trauma. After the lesson, students "suit up" in turn-outs and perform hands-on exercises with actual firefighters. During the winter months, when weather keeps us inside, students learn how to administer "hands-only" CPR and how to assemble EMS kits. In the Spring, we host a Learning Expedition where parents, family members, and Health & Science faculty are welcome to come and learn about emergency medicine and the fire service from the students themselves.*

TVF&R Promo Video- <https://www.youtube.com/watch?v=ph1qX0zXYAQ>

Hands-on CPR Tutorial Video

<https://www.youtube.com/watch?v=8JSmYxXsq4g>





# Oscar's Story: Witnessing a Miracle in my Biomedical Innovation Course



*Jeffrey Crapper is a biology and health science Career and Technical Education (CTE) teacher at [Health & Science High School \(HS2\)](#) in Beaverton, Oregon. Jeffrey is a National Board Certified Teacher-Early Adolescent Science and earned the honor of 2016 Oregon High School Science Teacher of the Year.*

When I first met Oscar, a junior at HS2, he was an extremely disengaged,

cynical young man. He was barely on track to graduate, struggling to get Cs in his classes, and rarely participated in classroom lessons or activities. Sadly, Oscar could have easily been one of the 40 percent of Latino males that drop out of high school in Oregon. However, that all changed when he enrolled in my [Biomedical Innovation](#) class.

The self-paced, project-based focus of Biomedical Innovation encouraged Oscar to thrive. He took leadership roles in his human physiology experiment in Mission File 2, excelled in his orthopedic injury capstone presentation in Mission File 8, and then coordinated an independent research project involving our biomechanics motion-capture system, which rivals the current motion-capture system used at local universities and graduate schools in the area.

Although Oscar has decided not to pursue a career in the medical field, his appreciation and interest in photography and filming has carried over to an interest in the field of biomechanics. Oscar, on his own, met virtually with biomechanists to develop a screening protocol for female athletes and anterior cruciate ligament (ACL) injuries. His skill and interest has allowed him the opportunity to instruct other students how to use this state-of-the-art activity.

Throughout my career, I have observed the PLTW curriculum transform the lives of my students, especially my students of color and those who are economically disadvantaged. If it were not for the dynamic, highly engaging curriculum embedded into the Biomedical Innovation course, Oscar would have been less inclined to stay focused and engaged academically.

Oscar learned more than valuable academic skills – he exhibited professionalism, leadership traits, and incredible problem-solving skills daily in his various interactions with industry professionals. A year ago, I would

have never guessed that the young man who rarely moved his head off the table in class might someday be meeting and collaborating independently with biomechanists and industry vendors from across the country.

And although he has never volunteered before, Oscar completed his volunteer application at HS2 and criminal background check before even graduating, so he can return to my school and volunteer with the motion-capture project. In addition, I've seen a level of maturity that I had never observed previously in this young man. In fact, Oscar is an incredible teacher to his former peers and considers the motion-capture project part of his legacy at HS2.

The PLTW Biomedical Innovation course was the mechanism that opened up incredible opportunities for this young man. As Oscar's teacher, I was blessed to see the development of an incredible desire to learn, which previously had been missing.

Project Lead The Way's mission of empowering students to thrive might seem to many to be a lofty goal. I can attest, however, that for Oscar, our PLTW Biomedical Science courses delivered on that mission by providing the mechanism for him to finally love the art of learning, take ownership in his own education, and develop the leadership and maturity necessary to converse with industry professionals without feeling intimidated or inferior.

As his Biomedical Innovation teacher, I could not be prouder of him and his amazing accomplishments this year.

*PLTW's blog is intended to serve as a forum for ideas and perspectives from across our network. The opinions expressed are those of each guest author.*

### **HS2 Personal Training Certification Program**

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- Under Internship program umbrella
- Offered to 12<sup>th</sup> grade biomedical students
- Once or twice a month experience
- Program would consist of combination of preparing for test, job shadow (Restore FIT), work with HS Athletic trainers etc.
- Possible collaboration with Mt. Hood Physical Therapy Assistant program

### **Personal Training Certification Information**

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Individuals applying CPT certification must meet the following requirements:

- Certified Personal Trainers must be 18 years of age
- Must have a high school diploma or equivalent.
- Hold a current cardiopulmonary resuscitation (CPR) and an automated external defibrillator (AED) certification
- Completion of CPT Exam

### **Options for offering EMR certification course**

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- NASM-CPT Program- \$380

## HS2 EMR Certification Program

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- Under Internship program umbrella
- Offered to 12<sup>th</sup> grade biomedical students
- Once or twice a month experience
- Combination of EMR course and career exploration experiences i.e ride-a-long, job shadow, career panel ect.
- Possible collaboration with Chemeketa Community College

## EMR Certification Information

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**Emergency Medical Responders** provide immediate lifesaving care to critical patients who access the emergency medical services system. EMRs have the knowledge and skills necessary to provide immediate lifesaving interventions while awaiting additional EMS resources to arrive. EMRs also provide assistance to higher-level personnel at the scene of emergencies and during transport. Emergency Medical Responders are a vital part of the comprehensive EMS response. Under medical oversight, Emergency Medical Responders perform basic interventions with minimal equipment. [From the: *National EMS Scope of Practice Model*]

Individuals applying for Emergency Medical Responder certification must meet the following requirements:

- Successful completion of a state-approved Emergency Medical Responder (EMR) course that meets or exceeds the National Emergency Medical Services Education Standards for the Emergency Medical Responder
- Have a current CPR-BLS for "Healthcare Provider" or equivalent credential
- Completion of a state-approved Emergency Medical Responder (EMR) psychomotor exam
- Successful completion of the NREMT EMR Cognitive Exam
- State EMR test and license

## Options for offering EMR certification course

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### TVFR

- Contacted TVFR Training director to see if we can partner with them to offer something on campus.
- Must apply to conduct emergency medical responder course
- State licensing contact is Leanna- 971-673-0526

### Red Cross

- Have existing program/course
- Emergency Medical Responder =\$350.00
- EMR Textbook =\$63.
- EMR Workbook =\$39.60
- Have a current CPR-BLS for "Healthcare Provider" or equivalent credential =\$60.00
- Successful completion of the NREMT EMR Cognitive Exam =\$75.00
- State EMR test and license \$45.00

PARTNERSHIP WITH HEALTH & SCIENCE SCHOOL AND PACIFIC UNIVERSITY SCHOOL OF PHARMACY  
DRAFT PROPOSAL  
OCTOBER 2017

**PACIFIC UNIVERSITY PHARMACY INTERNSHIP PROGRAM**

- Once monthly experience at Pacific University School of Pharmacy in Hillsboro
- Sessions would take place after 3pm
- Intended to give students a glimpse of the field of pharmacy
- Modeled after Kaiser Health Career Learning Program
- Open to 11<sup>th</sup> and 12<sup>th</sup> grade biomedical students

**PHARMACY TECHNICIAN CERTIFICATION PROGRAM**

- Engage pharmacy faculty and students to help guide students in monthly classes to support their study towards certification
- Held on HS2 Campus
- Intended to help prepare students for the exam and to enter workforce as Pharmacy Tech

**SIMULATION LAB TASK FORCE**

- Intended to brainstorm and advise HS2 on our simulation lab
- Representation from each of Pacific Schools of Health Professionals
- First meeting in November

**MENU OF OPPORTUNITIES FOR PACIFIC STUDENTS TO PARTICIPATE**

- [Avid Tutors](#)
- Medical Detectives
  - Write case studies
  - Prepare labs
- [Biomedical student Capstone](#)
  - Capstone judges
  - Mentor students with their projects
- Lab Assistants
- [Exhibitions of Learning](#)
  - Primarily in the Spring day long events
- Bridge Project
  - Middle school project constructing bridges

1/8/16

To whom it may concern:

Kaiser Westside Medical Center has had the privilege of working closely with Health and Science School since 2013. We collaborate on an internship program called the Health Career Learning Crew (HCLC). This program designed to help students learn about various health care careers. For eight sessions over the course of the school year, we arrange different speakers to discuss their career and lead a hands on activity. It is part of Kaiser Permanente's efforts to improve community health by encouraging students, especially those from diverse and/or economically disadvantaged backgrounds, to pursue postsecondary education and join the healthcare workforce.

The HCLC program at Kaiser Westside Medical Center (KWMC) is run in partnership with Health and Science School (HS2) in the Beaverton School District. HS2 serves students in grades 6 through 12 from a variety of diverse backgrounds and focuses on preparing students for college success.

This partnership has been extremely rewarding and successful. The success is made possible by the devoted and committed leaders at HS2 who consistently impress us with their efforts on their student's behalf.

We couldn't ask for better partners and enjoy being able to help the future of young leaders together.

Don't hesitate to reach out to me if needed.

Sincerely,

Adam Haslam



Building Manager  
Kaiser Westside Medical Center  
2875 NW Stucki Ave.  
Hillsboro, OR 97124

November 6, 2017

Advance CTE  
State Leaders Connecting Learning to Work  
Re: 2018 Excellence in Action Award

I am writing to enthusiastically recommend Health and Science High School for your 2017 Excellence in Action Award.

My son graduated from Health and Science (affectionately referred to as "HS2") last year. Thanks to the committed staff and abundance of enrichment opportunities there, Josh graduated with a terrific resume and a wealth of knowledge that launched him extremely well-prepared into Portland State's Honors College. He left high school with a passion for learning, a strong work ethic, a pile of college credit thanks to HS2's expansive Dual Credit programs, and a commitment to excellence that will serve him long after he graduates from college and graduate school.

HS2's classroom experiences were terrific preparation for university level academics. Thanks to dedicated teachers like Jeff Crapper, who have worked tirelessly to create classroom and extracurricular opportunities for students, Josh's high school education included extensive biomedical and engineering coursework, much of which earned him college credit. Beyond the classroom, internship and exploration offerings with the Red Cross, Tualatin Fire and Rescue, and Kaiser Permanente gave him insight into the inner workings of fields he's interested in and allowed him to forge connections with mentors who generously shared their expertise and guidance far beyond our expectations. Through a science program offered at HS2 by Lewis & Clark College, Josh was able to spend a summer working in an OHSU lab, a fantastic internship experience doing protein folding (I have no idea what protein folding is, but he tells me that what he learned in the lab was invaluable).

Besides the academic benefits of HS2's programs, there was an immeasurable personal benefit. Students are treated as professionals inside and outside the classroom, so they learn to interact in the professional world as adults while still receiving the level of support and attention that young people need. I heard over and over again from outside agencies how mature, responsible and capable our students were during interviews and in the workplace.

For students planning careers in engineering or health sciences, the academic road is long, the demands great, and the competition stiff. Health and Science gave our son the foundation and tools to make him successful. The knowledge base he built during his high school experiences is enormous, and the support and encouragement of the adults he has met through his Health and Science experience – the school staff, teachers, and the mentors he met through HS2's enrichment programs – instilled in him confidence and fearlessness in the pursuit of knowledge and greater understanding of the world he lives in. We could not have asked for a finer learning experience for our son than the one he received from Health and Science and its dedicated and talented staff, and that is why I recommend without reservation Health and Science High School for your 2017 Excellence in Action award.

Thank you!

Alica Martwick  
17754 NW Gilbert Lane  
Portland, OR 97229  
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[Martwick4@gmail.com](mailto:Martwick4@gmail.com)



CTE -- Excellence in Action Award  
8484 Georgia Avenue, Suite 320  
Silver Spring, MD 20910

November 1, 2017

To Whom It May Concern:

It is with great pleasure that I recommend Beaverton Health and Science High School (HS2) for the *CTE - Excellence in Action Award*. I have had the privilege of working with HS2 over the past four years to provide concurrent enrollment opportunities for their students. In this time, many teachers have champion the development and increased the rigor of their high school curriculum to meet collegiate standards for numerous courses.

When I think of outstanding programs that I have worked one common thread exists, dedication to student success. The first teacher Oregon Tech began working with at HS2 was Mr. Crapper. Mr. Crapper heads the Biomedical pathway for Project Lead the Way (PLTW) and has really worked to expand program options for students. Mr. Crapper is one of the most dedicated educators I have ever worked with. The first time I met Mr. Crapper was when multiple colleges were unable to articulate credit for his classes due to the nature of administrative rules our state has imposed on community colleges. This type of roadblock often deters teachers and subsequent programs from seeking out and expanding opportunities for their students. Mr. Crapper and HS2 didn't take "no" for an answer and sought to find an institution that could see their vision for students to see themselves as college going. His tenacity and dedication was the spring board to building a partnership that will not only impact his students, but students throughout the state.

Beaverton Health and Science High School articulated credit with Oregon Tech for the first time in the Spring of 2013. Mr. Crapper partnered with the college to impact college identity and readiness among his students. He adapted his coursework to not only meet our collegiate requirements, but to also align with the PLTW standards. Mr. Crapper sought the opportunity to not only articulate credit with his own PLTW classes, but also expanded the practice throughout his high school. Through countless meetings, phone calls, emails, and other correspondence, Mr. Crapper and HS2 Administrators worked with the college and teachers to provide college credit opportunities throughout the PLTW Biomedical pathway. Oregon Tech now partners with a number of teachers in the high school. This articulation with HS2's PLTW program led to the expansion of working with other PLTW Biomedical teachers throughout the state to offer dual credit along with the potential proficiency credit students receive through PLTW. HS2 was determined to make this a true pathway for students throughout the state and did so with persistence.

*Hands-on education for real-world achievement.*

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Mr. Crapper, Ms. Harris, Mr. Smith, and Mr. Baker are all extraordinary educators who put the needs of their students first. The expansion of dual credit at HS2 has impacted the ability to guide students to post-secondary programming that fits with our state's economic needs. The teachers and HS2's program are always creating new opportunities to provide student's knowledge into the vast world of healthcare and engineering. Recently the Biomedical program has connected with the college's Humanities Department to try to provide dual credit for the emerging field of Population Health Management. In working with this program, it has become obvious that the high school keeps pushing to better align curriculum to redefine and reinvigorate the high school classroom!

Sincerely,

A handwritten signature in black ink that reads "Carleen Drago Starr".

Carleen Drago Starr  
Academic Partnership Coordinator  
carleen.drago@oit.edu  
503.821.1297

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November 2, 2017

To Whom It May Concern:

Over the past decade the Beaverton Health and Science School or HS2 has created a community of students all preparing to be successful in career or college. Through a focus on inquiry based attainment of critical reading, critical writing, and critical thinking skills the team at HS2 are changing lives. HS2 has a strong focus on bio medical and engineering fields through two four year pathways and middle school grades aligned coursework. The skills for successful college graduates or successful employees are similar: digital literacy, inventiveness, communication skills, and the ability to produce results with real-world application. This is the work of HS2.

HS2 opened in 2007 and has expanded to include grades 6 to 12 and over 700 students. Even as a small school all students participate in CTE pathways with a STEM focus. When they started the school and district leadership worked hard to ensure all stakeholders were at the table. The entire community was invested in better education, a stronger economy and a brighter future for the community with HS2 as a new partner.

Washington County, Oregon is a high tech hotbed. Creating and meeting the demand for high-skill, high-paying jobs in high tech and Biomedical Science should be a state imperative – but it wasn't. With two voter lead property tax revolts Oregon school districts were cutting and retrenching not innovating. With CTE programs on the decline HS2 bucked the trend to do its part to develop a sustainable workforce with the technical skill, core academic knowledge, innovation and workplace behaviors needed to help our region succeed.

Since it's opening HS2 has been a diverse student body economically and culturally. HS2 has several indicators showing impressive student achievement, greater engagement, reduced dropout and increased college-going rates compared to similar populations. I do not have that data handy but I have seen it at community stakeholder meetings. HS2 has worked hard to partner with local post-secondary institutions to reduce the costs of postsecondary education.

The program implementation, talented staff and partners have created an great school. This track record is why community partners are deeply engaged in the schools success. Check out this video that relates to just one aspect of the internship partnerships at HS2:

<https://www.youtube.com/watch?v=86dfkZQrsA8&feature=youtu.be>

The team at HS2 are inspiring students inside the classroom and outside the classroom with multiple partnership like this one with HOSA:

[https://www.youtube.com/watch?v=YFuZzaP\\_5vA](https://www.youtube.com/watch?v=YFuZzaP_5vA)

HS2 students are Oregon's future, we already have an older than average workforce and peak retirement in the near future. Since 2010 99% of the new family wage jobs created required post-secondary training. Not every student chooses college but they all need real-world skills that they are gaining from the CTE programs at HS2. Entrepreneurship is a requirement at



HS2. Students in Engineering or Biomedical Science pathways have a curricular objective to innovate or invent. HS2 puts an emphasis on innovation and know-how when it comes to innovation and invention, and how one might make money off of those ideas.

HS2 partners with the community to provide technical knowledge required for students to lead and innovate. Technology is essential to the pathways at HS2, because it is integral to almost every career. HS2 pathways are using technology to teach students how to use technology, solve problems, collaborate more effectively, and boost performance.

Jeff Crapper is a teacher in the Biomedical Science Pathway at HS2. He is also active in HOSA. Jeff has been supporting schools who want to emulate the success at HS2 by attending and presenting at professional conferences (often at his own expense). He also generously makes himself available to schools considering a HOSA program and those needing assistance.

The HS2 the Engineering Capstone and Biomedical Pathway Capstone classes have been combined to provide levels of excellence not only in problem solving of real-world issues, but have pollinated the ideas of Disciplines of Study often isolated until graduate school. The collaboration in and out of the classroom has brought together pathways

Industry partners recognize the quality of HS2 teaching and how students respond in the classroom. HS2 classrooms intentionally cultivate a sense of wonder, the excitement of discovery, and the satisfaction of trying hard. The self-direction and self-discipline required, as well as the learned skill of team work and trust, are sought after abilities in the work-place and have allowed his students access to internships previously only open to students in college.

The revitalization of CTE including acceptance of Dual High School to College Credit is an area Jeff and the HS2 team's work may impact every high school student in the State of Oregon. Oregon voters recently passed the first sustainable increase in CTE funding in years. The work at HS2 was often pointed to as an example for why voters should support the ballot measure.

Brian Sica, the current Principal at HS2 and his team understand that a fundamental goal is developing partnerships with business and industry to keep programs grounded in the standards students must meet to compete in the job market— and they seek guidance on what must be included in instruction in order to be successful in their careers. HS2 has active advisory committees, expansive internships, teacher externships, workplace experiences and other interaction, local employers have the opportunity to share information regarding expectations, technical requirements and workplace behavior.

HS2 is a strong school worthy of recognition because they are doing everything they can to prepare the students in our community for a prosperous future.

Ed Dennis  
Government Relations Director  
Project Lead The Way