

The journey continues...

Delta High School

2012


Delta
High School



WELCOME BACK





DELTA HIGH SCHOOL

"In furtherance of Gordon Battelle's intent to support education in connection with creative research work and the making of discoveries and inventions, Battelle is committed to helping inspire and train scientists, engineers, and technology and thought leaders whose contributions will advance industry and the public good. Battelle's goal is to make measureable progress in addressing national STEM education and workforce challenges. As operators of the Pacific Northwest National Laboratory (PNNL) for the U.S. Department of Energy (DOE), our approach to managing PNNL is to deliver simultaneous excellence in science and technology, management and operations, and community service. To us, excellence in community service means being a trusted and valued community and regional asset. One example is our science, technology, engineering, and mathematics (STEM) education initiative, which is impacting the education ecosystem by focusing on the preparation of today's students for tomorrow's world. The initiative spans everything from sowing the seeds of wonder and inquiry among our school children, to providing rich hands-on experiences for educators and potential PNNL employees. It is a direct response to the national concern over the lack of students entering STEM disciplines. Not only are these disciplines critical to our nation's ability to compete globally, but they are also critical to PNNL's ability to transform the world through courageous discovery and innovation. The Delta High School Project is an example of how we can make an impact on high school STEM education and represents our focus on 1) setting high standards, 2) supporting excellence, 3) spreading innovation, and 4) meeting workforce needs."

Jeff Estes

*Director, Science & Engineering Education
Pacific Northwest National Laboratory*

*"One teaches best by example."
- Dr. Evelyn Boyd Granville, 20th Century Mathematician*

2006

- Founding partners Battelle, Washington State University Tri-Cities (WSU-TC), and the Kennewick, Pasco, and Richland school districts discuss the possibility of a high school in the Tri-Cities focused on STEM education. The partners create an advisory group and develop committees to research and analyze funding viability, facility options, and community partnerships.



2007

- The advisory group presents the school concept to local school boards and is positively received; a project manager is hired.
- Comprised of educators, scientists, engineers, community members, and higher education professionals, the core planning team assembles to develop a program of study.

- Partners continue to explore affordable and viable space options for the high school.

2008

- The Delta project demonstrates how DOE Office of Science supports the region's efforts to improve STEM education. Together with DOE and Ohio-based Battelle, PNNL is using its human and technical resources to support an innovative approach to teaching and learning.
- The Paul G. Allen Family Foundation and Battelle give grants to assist with developing the high school's program of study.
- Planning Principal Deidre Holmberg is hired to lead the efforts in program development, student recruitment, and teacher hiring.

- The Washington State STEM Education Foundation forms to support the school and STEM efforts throughout the Mid-Columbia region.
- Columbia Basin College (CBC) joins the project and offers its former Richland campus nearly rent-free to serve as the initial school site.

2009

- The three Tri-City school boards approve the opening of a STEM-focused high school in fall 2009.
- Local companies, organizations, and individuals donate approximately \$700,000 to help with renovating the CBC Richland campus. Battelle announces its intention to provide up to \$1.2 million to bridge the gap in operations funding for years one through four, and the state of Washington provides \$800,000 to complete facility renovations.
- Nearly 300 students apply for enrollment. Based on district enrollment numbers, a lottery results in 110 students being accepted into the inaugural class. Five teachers are hired from the three school district partners.
- PNNL assigns STEM educator Ann Wright-Mockler to support the day-to-day programmatic efforts at the school. Wright-Mockler works closely with STEM Foundation staff to provide community leadership, outreach, and technical assistance in support of the long-term sustainability of the school through advocacy and communications.
- EdWorks, a nationally recognized leader in small-school start-ups, assists Delta leadership with its focus on improving student achievement through a results-based framework. The first-year site review indicates that Delta is making expected progress in implementing the EdWorks framework.

2010

- The total student and teacher population doubles with the addition of tenth grade.
- Comprehensive professional development for teachers, focused on student learning, includes writing across the curriculum, use of Socratic seminars, instructional design focused on the rigor and relevance framework, strategies for improving instructional practice, examining student work, professional conferences and webinars, visits to other high-performing classrooms, teacher collaboration time, and individual mentoring and coaching sessions based on teacher needs.
- EdWorks site assessment team's annual review documents Delta performance as moving from "Basic-to-Emerging" to "Effective-to-Exemplary" in the span of one year in the areas of rigorous curriculum and instruction, aligned assessments, systems of student support, and supportive climate and culture.
- Delta has VIP visits from Senator Maria Cantwell, Representative Brad Klippert, Washington State Superintendent of Public Instruction Randy Dorn, the State Board of Education, the Washington Business Roundtable Education Committee, and others.
- The Washington State STEM Education Foundation hires Karen Baker as executive director. Baker leads efforts to generate passionate support for STEM education in the community. Delta is the Foundation's first project.

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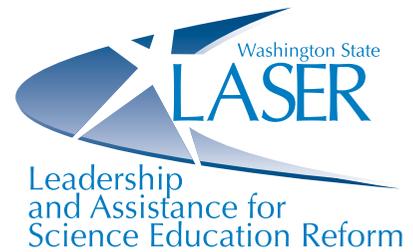
Delta adds a new part-time academic counselor to the educational team. Lisa Muir helps students prepare for their senior year internships and plan for their academic life after high school. Lisa collaborates extensively with teachers and helps tie in the advisory component of student learning with traditional classroom learning.

The Washington State STEM Education Foundation hires Jodie Thomas and Suzy Merz to help further the Foundation's goal of supporting STEM education throughout communities.





In its third year, Delta is designated a Washington State Innovative School by the State Superintendent of Public Instruction Randy Dorn. A panel of educators identifies Delta as a “bold, creative, and innovative school that is making a positive difference for students.”



The school continues to attract attention from state and local leaders for its unique approach to student learning. Washington State Governor Chris Gregoire visits the school in early fall. All guests spend time in classrooms and get one-on-one time with students to learn more about their Delta experience.



Additionally, Delta receives one of five Washington State LASER Science Education Advocate Awards. Each year, LASER (Leadership and Assistance for Science Education Reform) recognizes individuals and/or project teams who have gone above and beyond by promoting the importance of science education among the general public and/or the education system.



My Delta Story...

To me, Delta is a way for me to connect to the bigger STEM community and to network with people and companies.

If I wasn't at Delta, I wouldn't be in school at all. I had a hard time getting along with people in middle school. At Delta, we're legitimately like a family. We're not all the same people, but we count on each other. At first, I struggled with learning, but nobody at Delta left me behind.

Before Delta, I was a follower. Now, I brainstorm business ideas with my friends. I know that I have valuable ideas, and I know I can rely on my friends and teachers at Delta, now and in the future, to help me bring them to life.

Marina Noyola
Class of 2013



CROSS-CURRICULAR LEARNING OPPORTUNITIES ARE ABUNDANT

Delta teachers recognize one way to make learning relevant for their students is to show them how the lesson applies to more than “just this one class.” In support of that, all staff work hard when planning semester lessons. For example, when instructors are planning, social studies teacher David Blacketer, doesn’t just say, “We’re studying sustainable civilizations throughout time.” He instead collaborates with his team around common standards to brainstorm a meaningful lesson for students.

This year teachers took the sustainable civilizations idea and incorporated it across five lessons: math, English, social studies, technology, and science. While students studied about the characteristics (both positive and negative) of sustainable civilizations in social studies, they learned about the effects greenhouse gas emissions play on people and societies in science teacher Mary Beth Tilson’s class. Students transferred that knowledge to Emily Blankingship’s technology class and designed sustainable landscape designs with CAD software. Tenth grade math teachers coupled those efforts by

showing students how mathematical formulas can be used to calculate greenhouse gas emissions, and English teacher Linda Stairet asked student groups to write, direct, and produce their own plays about sustainability in today’s society.

Purposefully designing lessons with cross-populating themes, like the example above, keeps students engaged and encourages them to consider how school learning connects to broader issues in their school, community, and world.

Interactive and meaningful work is reaping rewards for students as they transfer their classroom work to state testing questions. On mandated testing subjects—reading, writing, science, and math—Delta results were above the Washington State norms in all categories.

Delta 2011 Results

	Delta High School	Washington State
Reading	93.3%	82.3%
Writing	93.5%	86%
Science	81.3%	49.7%
Math Year 1	82%	62.4%
Math Year 2	89.6%	72.9%

School leaders will continue to intentionally develop interactive lessons, foster real-life activities, and make learning relevant for students of all abilities. That’s the Delta difference. That’s the Delta way.

COMBINING PASSION AND LEARNING

Classrooms at Delta come in all shapes and sizes. Of course, the campus houses the traditional classroom with four walls, a floor, and ceiling, but teachers also use the outdoors when teaching about surveying and ecosystems, and local businesses and companies as classrooms when students participate in internships; they even use competition venues.

Encouraging and supporting students in competition efforts and acting as advisors for school clubs are other ways Delta instructors and mentors extend the learning day, thus helping students prepare for their best future. While the Tech Club began during Delta's first year, most other weekly clubs are less than two years old. To prepare for Math Club competitions, students practiced taking tests administered in previous contests; the club is about more than competition, however. For example, students also explore the role mathematics plays in various career fields. Says Math Club mentor Eric Bell, "Students are not only broadening their understanding of how mathematics applies to real life, but also seeing a much wider spectrum of application areas, including less traditional ones."

Between course expectations and club opportunities, students participated in several local and state competitions—opportunities that allowed them to hone their presentation skills, while both mastering concepts and developing skills in research methodology and documentation. The latter two skills transfer well to STEM areas.



This year's events included National History Day (where several students qualified for the state-level competition) Poetry Out Loud, the Science and Engineering Fair, participation in the Tri-Cities FIRST Robotics team, and math competitions. At the state level, National History Day students placed as high as 3rd among a highly competitive field, and their advisor, Jenny Rodriguez, received a mentor award. Approximately 10 students earned special recognition awards in Delta's first year at the Mid-Columbia Science and Engineering Fair. At the start of the school year, Delta students in Math Club participated in the Rocket City Math League's annual online math contest, where they placed 24th out of 95 schools and 4,500 students. The Math Club also placed 5th in the Apollo Division (Algebra 2) of Rocket City's three part team competition, an improvement over last year's 7th place finish in the Gemini (Geometry) Division.

As student interest grows in other areas, school leadership will look for creative ways to involve mentors and incorporate additional clubs into Delta's culture.



Why Mentor?

I look at mentoring as a growth opportunity—not just for the students, but for myself, as well. It’s an ideal opportunity to nurture talent—both hidden and apparent at key moments in a student’s life—and provide career or life guidance. High school students, like those I interact with at Delta, are a pleasure to work with—they have an eagerness to learn and develop new skills; their enthusiasm to work hard is contagious.

It’s hard to explain the experiential rewards of mentoring, but it’s an emotion that is easy to feel. The satisfaction I get when watching young adults explore possibilities and become energized about a shared passion is inspiring, invigorating, motivating, and challenging.

As I work and develop relationships with students, I’m awed by how much we learn together. Through mentorship, my colleagues and I can leave lasting legacies with students, and they, in turn, bring a passion for excellence to the next generation.

Eric Bell
PNNL NSD Scientist, Fitzner-Eberhardt Award Recipient

EXTENDING THE TRADITIONAL CLASSROOM

Delta students not only have an exceptional learning experience outside-of-class, but also have the unique opportunity to get hands-on STEM learning through many outside of class enhancement opportunities, such as:

- STEM Convocation
- Learning About Food Science Day
- Girls Learning About Manufacturing
- The Mini-Sumo Robot Competition
- Options in STEM Day.

STEM CONVOCATION (STEM CON)

The 2012 STEM Con allowed Delta students to work alongside career professionals during interactive lessons. Participating professionals brought “real-world”-based problems, and students were challenged to find solutions in areas such as operations research, food engineering and safety, dental forensics, or building a test interferometer to detect gravitational waves. The options available to students were broad. Some students simulated DNA extraction in forensic science by extracting DNA from food products, while others used statistics and engineering principles to design the most marketable energy drink.

The two-day seminar was a blast for all, especially the students who built egg-launching siege engines—an opportunity where they designed a functioning siege engine based on engineering expectations, real-world demands, and timelines.



GIRLS LEARNING ABOUT MANUFACTURING (GLAM) & LEARNING ABOUT FOOD SCIENCE (LAFS)

During GLAM, girls participate in a team project using their creativity, marketing, and problem-solving skills alongside motivating female industry professionals. In small group sessions, the budding STEM professionals are educated on academic pathways that lead to a variety of career opportunities within the manufacturing industry. Their full-day project involves designing a multi-functional bag from the ground up. They use professional software to design and physically create the bag before presenting it to a panel of judges at the end of the day. Final projects are displayed at the annual Smartmap Expo held at the TRAC in Pasco, Washington.

LAFS is an interactive seminar encouraging males to investigate the world of food science and related topics, including nutrition and food economics, contamination, and packaging, as well as many of the aspects of the corporate food chain. The students participate in many workshops, active



sophomores with science and engineering fair projects, which were presented in mid-winter.

MINI-SUMO ROBOTS

Just before the end of school, students from local area high schools, including Delta, participated in the mini-sumo robots contest. In a fun, competitive environment, student-built, microprocessor-controlled mobile robots are designed to push one another out of the official “contest arena.” Unlike radio-controlled machines, the sumo robots are controlled by student-programmed microprocessors and infrared emitter/receiver sensors. Formally known as the Tri-City-wide Mini Sumo Robot Contest, the 10th annual event held May 17, 2012 at PNNL included more than 25 team entries from Delta and Kamiakin High Schools. “Bots,” as they are affectionately called, are considered “legal” if they had a 4”x 4” footprint, though larger entries were allowed. Being legal had one advantage—a rematch in case of a first-try loss.

Gordon Anderson, a PNNL staff member and co-organizer of the event, stated, “Any kid who can create a sumo robot from basic electronic parts will have the same entry-level skills that industry looks for in hiring engineers with a college degree.” Gordon has worked with Delta technology teacher Jim Hendricks since the 1980s to share their love of science with young men and women. “Our goal is to create as much excitement around science as there is in sports,” Gordon explained.

problem-solving, supply chain management games, and collaborate with new classmates. The culmination of the day is the announcement of the Food-O-Nomics champions—students who made the most money working in a simulated food industry program by deciding between the best products (organics vs. genetically modified, for example) within a fixed budget and timeline.

These activities help orient new students to the Delta model of collaborative problem solving, as well as to each other in their first month of school.

OPTIONS IN STEM DAY

Also known as “Options Day,” this is a day that opens doors for Delta students. In the 2011-2012 school year, juniors had the opportunity to tour PNNL labs, as well as the local hospital. The tours helped students make connections to STEM professionals, which is fundamental to gaining internships—a graduation expectation for Delta students.

While the juniors were touring, staff from the participating organizations assisted freshman and

COMMUNITY-WIDE EFFORTS SUPPORT STEM

While STEM Con provides interactive lessons for local high school students, it's also a time when supporters, mentors, and instructors harness their resources and power to raise awareness for STEM education.

A distinct part of STEM Con is STEM Connect—an evening celebrating Mid-Columbia achievements in STEM-related education efforts. This year's guest speaker was Dr. Tahlee Baynard, US Black Engineering & Information Technology Magazine's 2012 Scientist of the Year. Dr. Baynard spoke passionately about a subject close to his heart and one that local Delta supporters take seriously—mentoring. After Dr. Baynard finished his speech, Washington State STEM Education Foundation Executive Director Karen Baker presented several STEM awards, recipients include STEM Educator – Katherine Rowley, STEM Volunteer – Bob Talbert, STEM Catalyst – Ann Wright-Mockler, and STEM Impact Partner – Larry Chick.

Mentors serve as a key element of success in many systems, but are particularly important to a school like Delta, where internships are part of the culminating experiences of the students' senior year. However, mentors play an important role from the first week a student attends Delta. As freshmen, mentors work with students weekly to help develop problem solving and critical thinking skills. In the sophomore year, mentors discuss careers in STEM areas and the connections between academics and the world beyond. Juniors interact with mentors



through mock interviews, resume development and review, and workplace tours and job shadows. Throughout all four years, students and mentors collaborate during STEM enrichment activities and projects that are part of Delta's program of study. With the start of a senior class in 2012-13, students will experience the penultimate Delta mentoring experience as they intern with businesses and organizations across the Tri-Cities.

Last year over 250 professionals from Pacific Northwest National Laboratory and other businesses and organizations acted as Delta mentors and volunteers. With 100 additional students at Delta this year, school leadership hopes to increase the number of individuals willing to act as group mentors, classroom and lesson collaborators, field trip experts, internship hosts, and more.



Our Delta Story...

"At Delta, our aim is to produce industry and college-ready, STEM literate citizens. It's a tall order, but a necessary shift in thinking so that Washington's highest STEM paying jobs can be filled from our public school system. We teach thinking and problem-solving within the context of integrated course work, rigorous and relevant case studies, and a family-style atmosphere. We take learners of all levels, from three distinct communities, and meld them into a single, powerful alloy. We think differently, stick together, and don't leave anyone behind. We heavily rely on our community to inform our curriculum and invite them in to see the results. New internships, amazing state test results, unprecedented community engagement, and collaboration between districts are all hallmarks of the Delta experience. We live in a community that values science, technology, engineering, and mathematics and families have trusted us to make sure their students learn 21st century skills."

Principal Deidre Holmberg
and the Delta High School Staff



Karen Adams
David Blacketer
Emily Blankingship
Deborah Burke



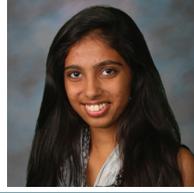
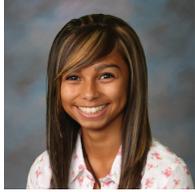
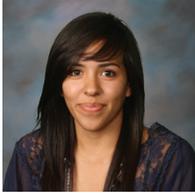
Linda Estes
Jim Hendricks
Lisa Muir
Sarah Pack

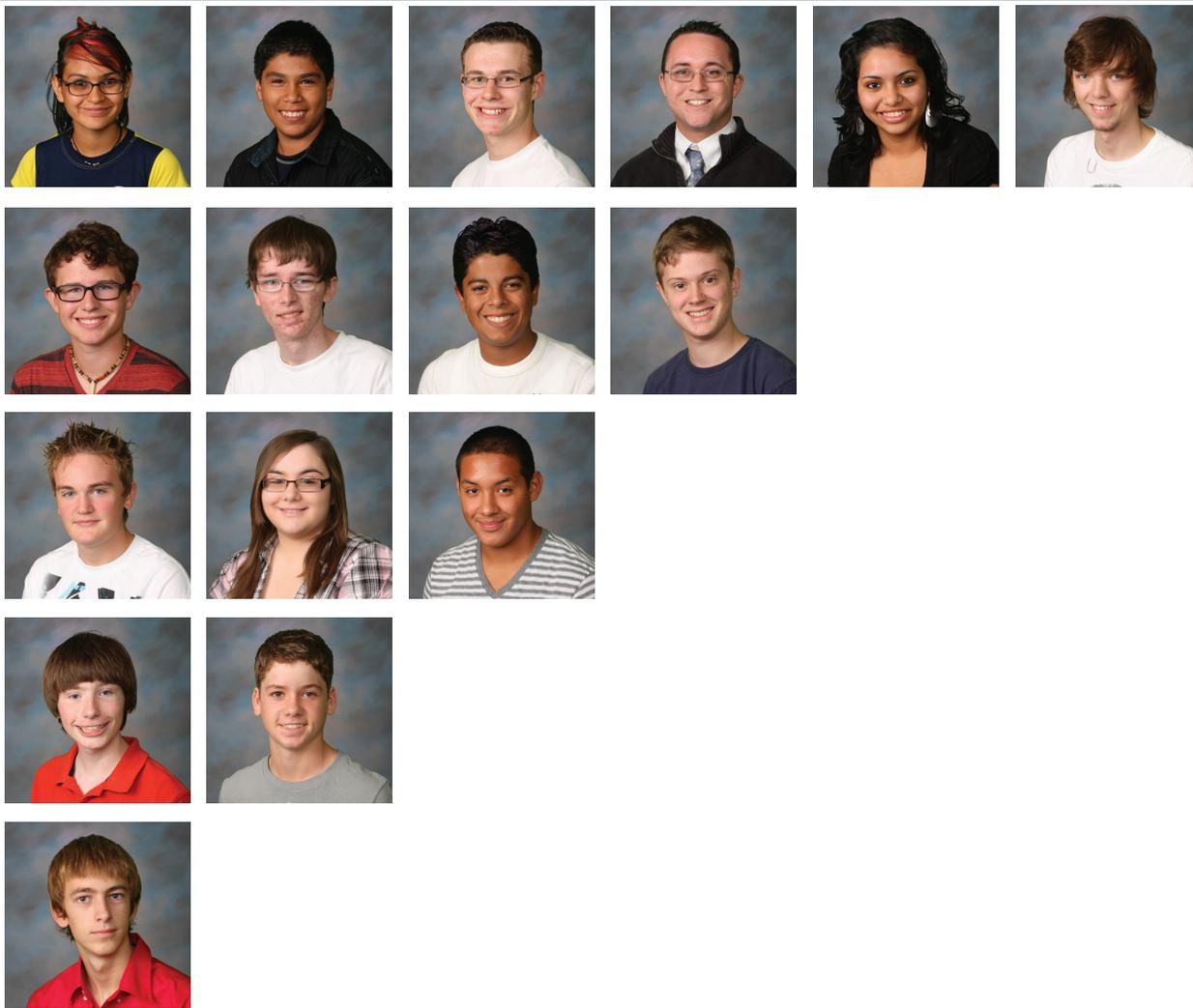


Jenny Rodriguez
Don Rumsey
Linda Stairet
Cathie Tate

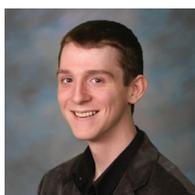


Mary Beth Tilson
Margarita Alaman





FACES OF THE FUTURE ***JUNIOR CLASS***





FACES OF THE FUTURE

SOPHOMORE CLASS





FACES OF THE FUTURE

FRESHMAN CLASS




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The journey continues...

Battelle
The Business of Innovation

WASHINGTON STATE UNIVERSITY
 TRI-CITIES
World Class. Face to Face.


KENNEWICK
SCHOOL DISTRICT
Education is the bridge to the future.


PASCO
SCHOOL DISTRICT #1


RICHLAND
School District


Columbia
Basin
College

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*Think Differently
Personal Real World*



A unique opportunity, a unique school.

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Together

Open Boundaries