

*This is the continued story of  
Delta High School*

2011

  
*Delta*  
High School





# Delta High School

deltahighschool.com

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# DELTA HIGH SCHOOL

We are the next generation of leaders and innovators.

Our school prepares us for challenges, providing the critical thinking and problem-solving skills we need in our technologically advancing world. Our environment of talented educators, peers, mentors, and community supporters is guiding us toward opportunities in college, in our chosen careers, and in the possibilities we dream for ourselves.

*"We especially need imagination in science.  
It is not all mathematics, not all logic,  
but it is somewhat beauty and poetry."*

*- Maria Montessori*

# 2006

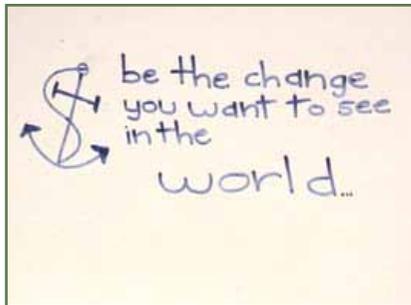
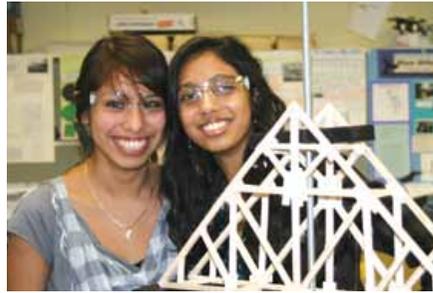
**Battelle**  
*The Business of Innovation*



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 science, technology, engineering, and mathematics (STEM) education. The partners create an advisory group and develop committees to research and analyze funding viability, facility options, and community partnerships.



# 20 07



The advisory group presents the school concept to local school boards and is positively received; a project manager is hired.



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



Comprised of educators, scientists, engineers, community members and higher education professionals, the core planning team assembles to develop a program of study.

# 2008



The Delta project demonstrates how the U.S. Department of Energy's 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.



Planning Principal Deidre Holmberg is hired to lead the efforts in program development, student recruitment, and teacher hiring.

THE PAUL G. ALLEN  
FAMILY *foundation*

**Battelle**

*The Business of Innovation*

The Paul G. Allen Family Foundation and Battelle give grants to assist with developing the high school's program of study.



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 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.



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.



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.



PNNL assigns STEM educator Ann Wright-Mockler to support the day-to-day programmatic efforts at the school. Wright-Mockler works closely with the 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.



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.



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.



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.



## *My Delta Story...*

*"I came to Delta High looking for a school which offers something new.*

*Delta needed pioneers to lead the way for education and I jumped at the chance to help shape the future of STEM education. There have been hardships moving forward through these metaphorical forests, but there's nothing more rewarding than finding what works or doesn't and leading the way.*

*The teachers are some of the most talented, motivated, and dedicated I have met. They genuinely care for our futures."*

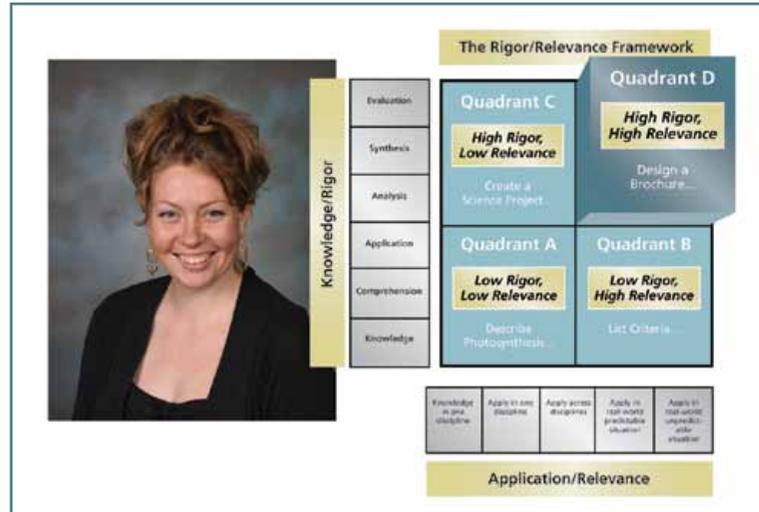
*Omar J. Freeman, Class of 2013*

## RIGOR AND RELEVANCE IN TEACHING AND LEARNING

Delta High School instructors use a variety of teaching techniques to engage their students in deep, meaningful learning. One of the school's partners in this endeavor is EdWorks, a nationally recognized leader in small-school start-ups. Their experts help Delta leadership improve student achievements through the application of a results-based framework, including:

- Establishing a rigorous curriculum and employing “high pay-off” instructional strategies,
- Establishing a supportive climate and culture within the school,
- Aligning the curriculum and instruction with a well-structured assessment plan, and
- Establishing a comprehensive student support system.

The instructors are challenged by this approach to engage students in learning and encourage them to transfer that knowledge to their community. Deep and meaningful learning happens when relevance and rigor are at the center of each lesson. Relevance, or what engages students, and rigor, which encourages higher-level questioning, connect the pieces of classroom learning to the bigger picture of our world.



Advisory teacher Sarah Pack and her colleagues led a critical thinking project (above photo and graphic) where students were asked to explore an abstract concept using targeted habits of mind. Students selected a concept, developed a guiding question about that concept, and explored that concept from two different perspectives. Throughout their project, students used personal experiences, responses from community mentors, and information gathered from primary and secondary sources to answer the concept question. The final step was to present their concept to their peers. Says Pack, “It was a well developed lesson, one that as a teacher I was proud of, and when the project was over, it served as a ‘snap shot’ of my students’ thinking—something they can take with them in the future.”



## **GREAT THINGS CAN HAPPEN WHEN LEARNING OCCURS OUTSIDE THE CLASSROOM**

Delta staff, community partners, and STEM career speakers continue their efforts to broaden and deepen the Delta experience by connecting academics to the world beyond the classroom. They achieve this through collaboration projects such as Options in STEM Day, the Girls Learning About Manufacturing (GLAM), Learning About Food Science (LAFS), Food Science workshops, the Ice Age Floods project, after school STEM clubs led by STEM professionals from the community competitions such as Cyber Challenge, Sumo-Robots, Science Olympiad, National History Day, and a culminating spring event called STEM Convocation.

At the two-day 2011 STEM Convocation (STEM Con), Delta students connect with the STEM career professionals and “get their hands dirty” with lessons that are relevant and meaningful. In other words, STEM Con provides yet another opportunity for students to make connections from their classroom learning into the real world.

This year, students had a plethora of options. Those who wanted to test their design and engineering skills participated in the “Egg-Lander Design Competition.” Some students

learned how to analyze scientific and physical evidence the same way professionals do when solving police cases; others examined the chemical and physical properties of soil crusts. Many students suited up and then listened and watched as a local doctor, using a human heart, explained its functions (photo at left).

“STEM Con reaps two instant benefits,” says PNNL STEM education specialist and Delta liaison Ann Wright-Mockler. “First, it provides relevant connections for learning. Second, it allows students to connect with local STEM professionals and encourages them to start thinking about what their professional life may look like.”



## *My Delta Story...*

*"Ms. Holmberg came and gave us a presentation about Delta High School. Her energy and passion attracted me right away. The presentation got me thinking of my future and what Delta could do for me. I thought hard about my decision, and in the end I went to Delta to get a new and better experinece, which is what I got.*

*I did not expect to be as close to my teachers as I am. Also I did not expect to make all of the friends I did. Instead, I know all the freshmen, and a huge portion of the 10th graders.*

*It is almost as if we are a big family. No matter how different someone is, we are all friends."*

*Ashlynn Etherton, Class of 2014*



## GIRLS LEARNING ABOUT MANUFACTURING

More than 75 Delta High School freshman and sophomore students participate in a program at Columbia Basin College called Girls Learning About Manufacturing, or GLAM. The collaborative effort between Columbia Basin College, Washington State University, WorkSource, Tri-Cities Research District, and PNNL exposes students to the manufacturing field. The students are assigned to teams that design, manufacture, and market an item. The half-day workshop has the students modeling the research and development cycle used by PNNL to create prototype products such as pet carriers, school backpacks, and a glamorous bowling bag.

## LEARNING ABOUT FOOD SCIENCE

While the girls attend GLAM, the boys participate in Learning About Food Science (LAFS). The students explore the role of yeast in bread-making, how curdling milk results in cheese, how gelatin works in different candies, and how fruits and vegetables are preserved. They discuss food allergies and dietary constraints for health or personal choice as well as culture and food.

Several PNNL staff members designed the workshop to help students explore the science of everyday

foods. Participants use communication, brainstorming, and teamwork as they gain an in-depth understanding of a particular type of food and later work as a team to develop an innovative new food product. Students are guided through the process of new product development, from identifying the challenge, brainstorming issues and possible new products, to identifying the target market and creating a presentation to potential investors.

“One of my favorite experiences with LAFS was watching the kids learn to take ownership and pride in their work,” said PNNL scientist Andrea Hjerpe. “They also appeared to have an ‘ah-ha’ moment as they were understanding science in relation to something they use daily: food. LAFS helped students to understand the applicability of science to their daily lives.”



*"The leadership PNNL and its staff contribute to educational programs like this is invaluable. Our staff and resources can make a real difference in connecting today's students to tomorrow's workforce."*

Evangelina Shreeve from PNNL (above, right) was a member of the GLAM leadership team. She also served as a team mentor and mock CEO of Pets 'R Us. "GLAM offered a creative, interactive opportunity to influence the future workforce," stated Shreeve. "Throughout the workshop, you could see the enthusiasm mounting as the girls were encouraged and empowered to consider new career options."



## STEM MENTORS

"It's almost too good to be true," is how PNNL scientist Andrea Hjerpe describes her time as a mentor for STEM-centered activities. Hjerpe is one of more than 100 PNNL staff members who have supported Delta High School either through curriculum development, professional development opportunities, hands-on opportunities such as research and experiments, or general building operations.

At first, Hjerpe was a little intimidated about acting as a teacher. But remembering what it was like to be 17 and love science, she inquired about mentoring after reading an article about STEM opportunities. While it was not without its challenges, the rewards were almost instantaneous. She realized that sharing science with students reminded her

of why she loves her work. "When I'm teaching about DNA or matter, I'm able to relay my story. Being with kids—especially Delta students—renews my passion for science."

Mentors typically meet with individuals or groups of students once every two weeks to offer constructive criticism on project work and evaluate student presentations. The students benefit greatly from the thought-provoking conversations and personalized attention they receive from mentors. As one student noted, the mentors "don't necessarily answer our questions;

they help us work through the problems by asking questions to help us think through the answer."

PNNL Lab director Mike Kluse stated, "Mentoring is part of community commitment. We didn't have to canvas the Laboratory looking for volunteers; there has been an outpouring of staff wanting to work with these kids and stay involved in this ongoing role."

By influencing STEM program design, decisions, and policies related to students and teachers, PNNL staff are preparing a robust group of young researchers and developers to keep the United States at the forefront of innovation.

## STUDENT-LED TOURS PROVIDE A “WINDOW” INTO THE DELTA EXPERIENCE FOR VISITORS

A handful of Delta students enthusiastically hosted the Washington Business Roundtable Education Subcommittee on a student-led tour of their classrooms. This specialty tour included the technology lab, where the student tour guides described an integrated project using science, engineering, math, technology, language arts, and social studies to research, design, and build trusses. In math class, they studied triangles, learning to measure triangles on a pitch to determine how high the slope was. They used AutoCAD software to design house plans, which they scaled down and then built using balsa wood. In science class, they tested how much weight each truss could hold, and in technology class the students studied how trusses were used throughout history. This project carried over into social studies and English as the students observed different architectural building styles in their local community as well as native plants and landscaping that help shape a building’s character. Students concluded the project by writing a report.

“This is just like when I was in school...NOT!” joked Cliff Burrows, President, Starbucks Coffee, United States.



The state business leaders engaged the students with questions about their career aspirations, what they like about their school, and how they feel Delta differs from other high schools. One student responded, “At a traditional school, you learn about triangles. Here at Delta, we’re applying concepts to real-world situations. We’re seeing them in action, not just learning about them and moving on. We’re digging deep and applying our learning.”

Many commented on their appreciation for small class sizes of about 25 students, which allows vital one-on-one time with teachers and mentors. One student summed up the sense of togetherness by saying, “We wrote letters to the freshmen, and I said I walked on to this campus full of strangers; we walked out of the first trimester as friends; and now we have become a family.”



## STUDENT SENATE ACTIVITIES

The start of the new school year brought exciting opportunities for students to display their leadership skills and direct social and charitable activities. Through a blind election process ten students were anonymously elected by their peers to lead the Student Senate. Each candidate explained their point of view on an electronic application and garnered staff recommendations that their advisor, social studies teacher Jenny Rodriquez, wrote up in a voters' pamphlet. Rodriquez said, "We follow a different model for elections, because we like to do things differently at Delta. I like that the students vote for ideas, not people."

Delta Student Senate activities encourage all students to practice teambuilding, work well with adults, manage projects and budgets,

build school spirit, and give back to the community—proving that together, they are creating a meaningful Delta experience. A few of their activities include:

- Attending the Washington Associate of Student Councils (WASC) conference.
- Collecting 523 pounds of food for Second Harvest Food Bank and receiving a \$100 gift certificate for having the highest collection for a local supermarket's food drive competition.
- Raising \$138 for Elijah Family Homes, a local organization providing housing for families in need, with donations raised through the ticket sales for Delta's first semi-formal dance, Snowfall Soiree.
- Showcasing their fundraising talents during their first-ever school book fair at Columbia Center's Barnes & Noble Booksellers to help raise money for Delta leadership training opportunities.
- Electing the first upperclassmen Associated Student Body officers at Delta.

## PARTNERING WITH THE COMMUNITY

Delta's success relies on collaboration and unique partnerships from a network of STEM efforts across Washington State. Since the beginning, the community and local businesses have stepped up to fulfill the school's needs. For their part the school districts routinely provide resources and expertise to the project. In addition the districts collaborate regularly to develop processes to meet school needs.



One example of community impact on the classroom comes from PNNL. Ann Wright-Mockler, STEM education specialist, works to provide collaborative opportunities to give students a meaningful, tangible learning experience. She connects staff and students with STEM professionals at PNNL and in the community for collaboration around curriculum concepts and projects. Additionally, she connects with other community partners to provide STEM-focused enhancement opportunities, such as GLAM, STEM Con, and specialized field trips and eventually internships. To support Delta's efforts in developing meaningful learning opportunities, Wright-Mockler places teams of professionals in classrooms, where they share

their gift of subject and career knowledge with students. Building on her relationship with teachers and STEM professionals, she shares current and pertinent best practices teaching research to support learning and success.

"It would be nearly impossible to provide relevant learning opportunities for students given current financial constraints. Our community has come together to support the school, and that assistance will pay off as these students succeed in the future," says Wright-Mockler.



## EVOLVING LEARNING THROUGH TECHNOLOGY

Innovative practices that allow students the opportunity to use and become proficient with a variety of technology tools are common ways that Delta instructors infuse their lessons with technology. One way students are collaborating in innovative ways is through the use of Edmodo, a social media tool that helps teachers and students connect when learning inside and outside of the classroom. By using Edmodo, instructors can post lesson plans, pose questions, and assign homework for students who can access them anytime or anywhere using their own technological devices.

For example, a Delta English instructor may post questions regarding characters and

themes students read in *Lord of the Flies*, a required reading selection for 9th graders. Students can answer those questions, post their own, and respond to classmates comments and answers. Instructors like the opportunity because it gives introverted students an opportunity to express their ideas without feeling that the spotlight is on them while encouraging a more vocal student to express their ideas in writing. Students can collaborate with their teachers and classmates either instantly, later in the day, or from home.

The school is also one of a few in the state where taking technology classes is a requirement for 9th and 10th graders. Recognizing that teaching these skills is essential in creating the next generation of technical leaders, instructors don't back down from challenging their students. Classes include SolidWorks and AutoCAD—real life tools used in professional industries like engineering, architecture, and manufacturing. These opportunities not only give students a solid foundation in technology and an immediately employable skill, but they also naturally evolve to hands-on activities like building light bulbs and designing sumo robot panels.



## *Our Delta Story...*

*"We are humbled by the trust parents and community members place in our hands to make sure that these futures are blinding, not just bright. At Delta, we think differently to solve problems, make decisions, and empower our community to do the teaching. We know that every student who comes to Delta wants to learn, has to learn, and will learn. We give every 8th grader in the Tri-Cities the opportunity to be immersed in a STEM environment with like-minded individuals. We are starting to see the results and Delta's story is just beginning. We're at the end of the first chapter of a long book that details the revitalization and reinvention of student learning for Washington State and beyond."*

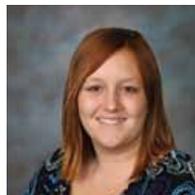
*Principal Deidre Holmberg and the Delta High School Staff*



David Blacketer  
Peter Brazil  
Deborah Burke  
Jim Hendricks  
Sarah Pack

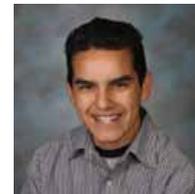


Jenny Rodriguez  
Linda Stairt  
Cathie Tate  
Mary Beth Tilson  
Grecia Gutierrez





# ***FACES OF THE FUTURE*** ***SOPHOMORE CLASS***





# **FACES OF THE FUTURE**

## **FRESHMAN CLASS**



*To be continued...*

Photography:  
Kim Fetrow, ImageWorks  
Jeff London, PNNL

  
*Delta*  
High School

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Personal Real World*



*A unique opportunity, a unique school.*

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*Together*

*Open Boundaries*