



## Delaware New Tech Academy at Seaford High School

Seaford, Delaware



The **Seaford School District** determined that a component of their “reinvention” of Seaford High School would be the creation of a **New Tech Academy**, affiliated with the New Tech Network and housed in a significant addition to that building.

**The New Tech Network**, headquartered in Napa, California, is a rapidly growing association of New Tech Schools now totaling over 100 schools nationwide.

## Executive Summary

**The context in which this school operates can be characterized as follows:**

- *Businesses partner with teachers/facilitators to design projects that are connected to the community and make learning relevant to the students.*
- *Students work in teams to brainstorm ideas, research the issues, solve the problem at hand, and present their results in writing and in presentations.*
- *1:1 computing allows student access to technology to complete research and design products in authentic ways.*



New Tech Network





Seaford High School was originally constructed in 1966 at 153,146 square feet on a 35 acre site. As part of the **“reinvention”** of Seaford High School, it was determined that the High School would house several schools-within-a-school, including a New Tech Academy, an 8<sup>th</sup> Grade Academy, a Naval JROTC Military Academy, a Marketing and Entrepreneurship Academy, and an International Baccalaureate School. This transformation from a traditional high school into several schools-within-a-school would require additions to the building and significant refurbishment to the interior. A major addition of approximately 60,000 square foot would be built to house the Delaware New Tech Academy, a New Tech Network school, plus relocate administration and guidance. Other work included significant interior renovations, an agriculture science laboratory and technical classroom addition, and a culinary arts addition that included a teaching kitchen, bakery, technical classroom, and restaurant.

## Scope of Work



**Original Seaford High School  
Circa 1940**



**1966**



**2013**

## **REINVENTION OF SEAFORD HIGH SCHOOL**

*“No one can prepare you for what heights you will soar until you spread your wings”*

- author unknown



## Data Sheet / Key Statistics

<b>Project Name:</b>	Delaware New Tech Academy
<b>Client:</b>	Seaford School District
<b>Location:</b>	Seaford, Delaware
<b>School Category:</b>	Secondary, School-Within-A-School
<b>Grades Served:</b>	9-12
<b>Capacity:</b>	400
<b>Gross Area of Building:</b>	59,121 SF
<b>Space (SF) per Student:</b>	148
<b>Total Construction Cost:</b>	\$15,321,000
<b>Square Foot Cost:</b>	\$259
<b>Cost Per Student:</b>	\$38,303
<b>Construction Delivery System:</b>	General Contracting
<b>Construction Start Date:</b>	November 2012
<b>Construction Completion Date:</b>	September 2013
<b>Estimated Energy Usage:</b>	<34 kBTU/SF/Year





The engagement process began several years prior to the start of the design for the Delaware New Tech Academy. The Seaford School District, and particularly Seaford High School, was struggling. Student population was decreasing at the secondary level due to outward movement through school choice to attend other high schools, including a county career and technical high school. Furthermore, overcrowding at the elementary school level was persistent and becoming problematic.

## Community Engagement Process

The Seaford School Board was seeking solutions and our team was commissioned to assist them in this process. Through a series of both Board of Education Regular Meeting and Community Workshop Meeting presentations and discussions over a two-year period, our team explored various solutions with the Board, administration, and community. In conjunction with the availability and acquisition of Federal Race to the Top funding, the Seaford School District gained the financial means to infuse a different curricular approach at the High School and a solution was determined.

The District deemed that a school-within-a-school concept was a viable means to enhance Seaford High School and stop the “hemorrhaging” of students leaving the District to attend other high schools in the County. Furthermore, in order to relieve overcrowding at the elementary schools, grade 5 would be moved to the Middle School. To release space to house grade 5 at the Middle School, grade 8 would be moved to the High School. To provide space at the High School to house grade 8, a wing would be constructed to house the New Tech school-within-a-school.



In Delaware, a referendum is required for any Major Capital Improvement Program. Our commission with the District was extended by the Board of Education to assist the District in the development and execution of a Capital Improvement Bond Referendum. Our team worked with the Board, administration, and Community Referendum Committee providing technical support including development of potential design alternatives, presentations at community forums, and development of FAQ sheets, brochures, and other support materials. The referendum campaign was successful with the community supporting the Major Capital Improvement Program.

## Community Engagement Process

Once matching State funding was assured, the District issued a Request for Proposals for interested architectural/engineering firms. Our team, of course, responded with a proposal. However, prior to that RFP being issued, our team started the planning process. **We began by significantly researching the New Tech curriculum and project-based learning. This included talking with several individuals associated with the New Tech Network out of Palo Alto, CA. In addition, we also felt that it was very important to see a New Tech high school “up close and personal” by visiting one of the premier New Tech high schools in the United States, namely Columbus Signature Academy in Columbus, IN.** While there, we talked with the school’s educational planner and lead architectural designer about their design and how it facilitated the New Tech curriculum and project-based learning.

Most importantly, we had the opportunity to tour the building during the school day observing students and teachers, and talk at length with the school principal and several New Tech students about how the school operated, how teaching and learning takes place, and how well the built environment facilitated that. We also had discussions with personnel at Innovative Schools, a Delaware nonprofit who would be involved with the Seaford School District in implementing New Tech. In the end, the Seaford School District chose our team as the Architect of Record for the Delaware New Tech Academy addition as well as renovations to the interior of the building and small additions for both Culinary Arts and Agriculture.



**Columbus Signature Academy  
Columbus, IN**

## Community Engagement Process

**Our design team included architects, engineers, IT consultants, and facility planners plus the educational planner, lead architect, and building principal from Columbus Signature Academy.** We began our design with two on-site charrettes with our team being joined by 30 representatives from the Board of Education, local politicians, staff, students, parents, and business community. In the first charrette, we worked together to develop a “vision” and answer our “Need to Knows” such as the number of different spaces and the activities within them, necessary space adjacencies, technology requirements, environmental requirements, and FF&E needs, among others. “Need to Knows” is a term taken directly from New Tech’s project-based curriculum model.

Detailed Educational Specifications were developed as an outcome to this first visioning charrette. Several iterations of these specifications were issued as the Seaford Board, staff, and community refined them, ending in consensus on a final Educational Specification. Using these approved Educational Specifications as a foundation for further development; a second charrette was convened with the original team to develop a conceptual design. We like to think of the Visioning Charrette as creating the pieces of a puzzle and the Conceptual Design Charrette as putting those pieces together to form a complete picture. The end result was a concept design floor plan for a 60,000 square foot addition to Seaford High School to house the Delaware New Tech Academy.





It was very important for us to ensure that our design documents aligned with the original vision and design as determined in the charrettes and reflected in the Educational Specifications. To that end, we initiated a peer review at the 50% DD level. This review was conducted by the principal, lead architectural designer, and educational planner from Columbus Signature Academy.

During the design process, contact was maintained with the Seaford School District and community. During this time there were several changes in leadership at the High School and a new Superintendent was brought on board, so it was critical that as these changes occurred, personnel were kept up to date as the design process progressed.

## Community Engagement Process

**Students were critical to the process. Of course, students were included on the original design teams and participated in the charrettes. However, it was important to keep them involved throughout the design process. One such means was having students heavily involved in the selection of furniture. In order to give students first-hand knowledge of the options in furniture being contemplated for the Academy, we brought in a “furniture bus” loaded with various types of desks, tables, soft seating, chairs, etc. that students could actually “try on for size.” They made their preferences known and we followed suit by including those selections in the FF&E bid.**

Both during construction and after, our team worked with the staff at the School to be sure that they understood “what they were getting” and why, tying everything back to the Educational Specifications. In addition, we assisted the School District with community open houses to showcase the facility. In addition, our team worked closely with the local press to explain the design process and design solutions and to answer any questions they had.

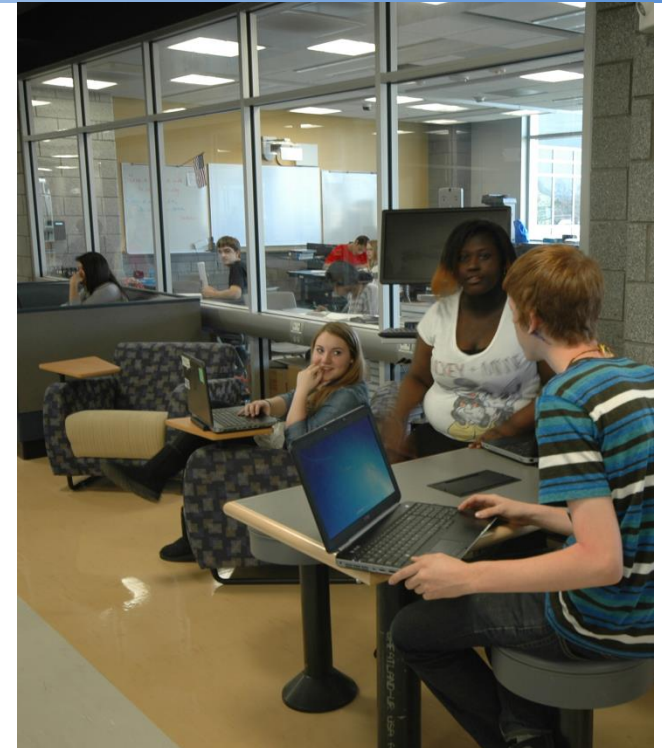
Follow-ups occurred with both staff and students after occupancy to determine how well the facility met their needs. Those proved to be very positive with everyone happy with the results.



There were many design considerations made to facilitate the implementation of the project-based, technology-rich, New Tech curriculum. **These include spaces for large and small group instruction, “break out” spaces for individual and small group study and collaboration, special support spaces, transparency between spaces, flexibility, especially with regard to technology and furniture, and the ambiance to support the New Tech “corporate feel.”** Furniture is a key component. Tables and chairs are wheeled to allow for maximum flexibility.

## Educational Environment

Because the curriculum is project-based and heavily dependent upon technology (each student is issued a lap-top computer), special consideration had to be given in the design to accommodate technology, both wired and wireless. Both wired outlets and wireless access is available throughout the building, including in all hallways and collaboration areas. Each classroom contains an interactive projection system and sound enhancement system. In addition, teaching is done from a moveable lectern on a 30 foot tether. These lecterns contain complete IT access and are moveable to allow for maximum flexibility. Because PCs are sometimes used rather than laptops because of their enhanced IT capabilities, several portable PC tripods on wheels containing a PC, keyboard, flat panel, and all connections are available in every space to allow students to be able to use a PC both in a studio and in other collaboration spaces.



The school has Integrated Studios where integrated curriculum is taught, i.e. "biology + literature = biolit." These spaces accommodate over 50 students with 2 facilitators (teachers). Standard sized studios (classrooms) are also available as are standard science laboratories. Science laboratories are state-of-the-art and comply with the design requirements of the National Science Teacher's Association. There are also Flex Studios (a combination of 2 standard sized studios) with a moveable partition between them that allows them be used as individual spaces or combined to provide another Integrated Studio. Ancillary spaces include conference rooms, a Digital Media Laboratory for audiovisual and video production and editing, a Project Studio with equipment and materials to create individual and group projects, and a Presentation Studio where students formally present projects to their peers, staff, and community. Since facilitators are not assigned their own individual "home" studio, the design includes a Facilitator's Suite that provides office space for each facilitator in an environment intended to allow for maximum collaboration that includes both conference and projection facilities.

## Educational Environment





Wherever possible, dry erase boards have been installed. All moveable partitions in the Flex Studios have an exterior of dry erase boards. Even the “coffee” and end tables in the soft seating areas have a writeable top.



## Educational Environment

The corridors are significant in that student breakout and small group spaces are located there with both soft seating and booth-style seating to facilitate discussion and collaboration. We call these special spaces **“collaboradors.”** These areas are especially favored by students, especially the booths.



It is difficult to separate the physical environment from the educational environment since both are inexorably linked. However, there are some aspects of the Physical Environment that haven't yet been discussed.

The design of the exterior of the building is a significant aspect of the physical environment. The mascot of Seaford High School is the blue jay. Our design team consistently used stylistic blue jays in flight during many of our presentations and workshops with the slogan by an unknown author of ***"No one can prepare you for what heights you will soar until you spread your wings."*** That was incorporated into the design of the exterior of the building with two "wings" spreading out from the building. Not only do these wings stylistically represent the blue jay mascot, they serve a practical purpose as a sun shade for the science laboratories with floor to ceiling windows. There were also other considerations included in the exterior design that included brick and cast concrete to match the existing building.

## Physical Environment





The interior is very much different that a traditional school. Because transparency is an important consideration in New Tech, there is a wide-spread use of glass throughout. Hallways, or **collaboradors** as we like to call them, are extra wide to facilitate the inclusion of special collaboration areas comprised of soft seating, booths, and tables.



## Physical Environment



As a part of the New Tech Network, the Delaware New Tech Academy was required to meet a minimum number of technical building specifications. The building was to be built to house a maximum of 400 students. Horizontal transparency was important as was the “ambience” of the building mimicking a “corporate feel.” Several specialized classrooms were required including “Integrated Studios” which are classrooms designed to accommodate 50+ students and 2 facilitators. In the New Tech Model, “teachers” are called “facilitators” because of their unique role in facilitating the tech-heavy, project-based New Tech curriculum.



## Physical Environment

Because students make presentations to peers, facilitators, parents, and the business community, a “Presentation Suite” was a requirement. In addition, several other spaces, such as “Flex Suites,” with moveable partitions that can be opened to create a double-sized room to act as an “Integrated Studio” were important in order to provide the maximum flexibility of space utilization possible. Because facilitators are not assigned a room of their own as is usually done in more traditional models, it was necessary to design a “Facilitator Suite” where each facilitator would have an office space, and all facilitators would have the opportunity to collaborate with each other. Other specialized spaces include a “Project Suite” where student can work cooperatively on projects, and a “Digital Media Studio” that includes a “Television Production Suite” and “Editing Studio.” Of course, there would be standard classrooms and science laboratories. There also needed to be space provided throughout the facility that would facilitate students working in individual and small-group settings.

In addition, the design was to include a complete “Administration and Guidance Suite,” relocating them from their current location in the existing school. Finally, the existing school library was to become part of both the existing school and the New Tech wing integrating both to accentuate that the New Tech student body, although a school-within-a-school, was still an important facet of the existing school.



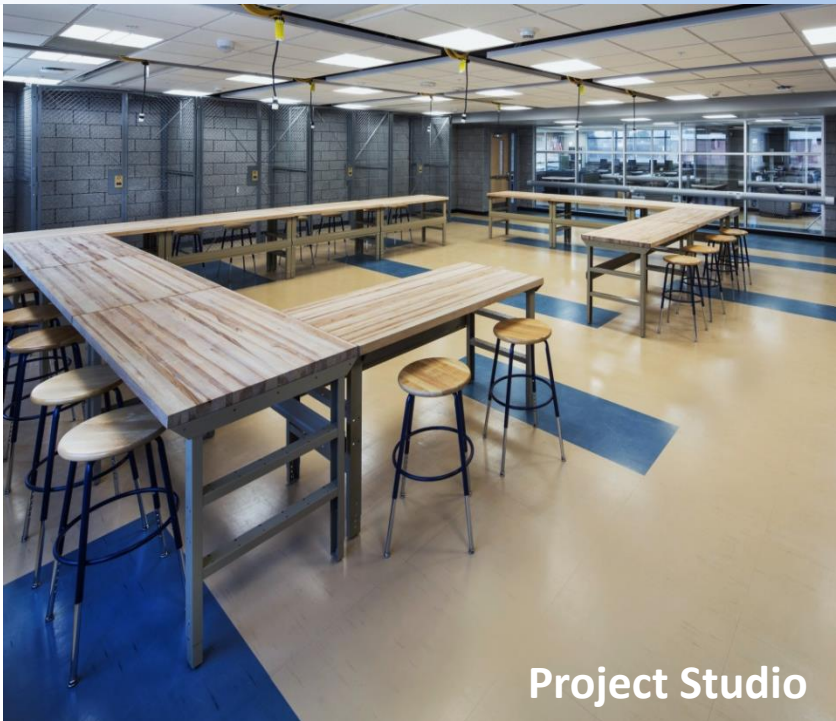


A/V Studio



Facilitator Suite

## Physical Environment



Project Studio



Library





- 1 ADMINISTRATION SUITE
- 2 GUIDANCE SUITE
- 3 SCHOOL STORE
- 4 MAIN ENTRANCE
- 5 STAFF ENTRANCE
- 6 FACILITATOR WORKROOM
- 7 CONFERENCE ROOM
- 8 INTEGRATED STUDIO
- 9 FLEX STUDIO
- 10 PROJECT STUDIO
- 11 STAND ALONE STUDIO
- 12 COLLABORATION SPACE
- 13 PRESENTATION STUDIO
- 14 EXISTING SCHOOL
- 15 COURT YARD

**First Floor Plan**



- 1 FACILITATOR SUITE
- 2 LIBRARY
- 3 DIGITAL MEDIA STUDIO
- 4 SCIENCE LAB
- 5 INTEGRATED STUDIO
- 6 FLEX STUDIO
- 7 STAND ALONE STUDIO
- 8 COLLABORATION SPACE
- 9 EXISTING SCHOOL
- 10 SKYLITE / OPEN TO BELOW
- 11 CANOPY OVERHANG
- 12 EXISTING SCHOOL

**Second Floor Plan**



It was also important to the Seaford District that the school-within-a-school concept not create an “us” versus “them” attitude between those students attending New Tech and those attending another Academy, especially since New Tech was built new. To that end, our team designed the library to accommodate the entire school and its location serves as a “bridge” between the original school and the New Tech wing. In addition, there are no student lockers in New Tech, so students there have their lockers in the original school. Also, students in New Tech attend gym, art, music, play sports, and eat in the original building. This arrangement facilitates their integration in the school as a whole.



## Physical Environment

Often the importance of engineering on a facility is often overlooked. The New Tech wing has a chilled beam HVAC system because of its quietness. When operating, the HVAC system is so quiet that it can't be heard in a Studio. In addition, LED lighting is used throughout to provide the best possible levels and quality of lighting. Finally, a new Combined Heating Cooling and Power (CCHP) system has been installed to serve the entire building including the New Tech wing. This system employs a natural gas generator to generate electricity for the building with the waste heat being used to supplement the heating and cooling of the building. Total building energy consumption is expected to be less than 34kBTU/SF/Year, thus saving the District significant energy dollars.



Our team conducted several television interviews with students and staff after occupancy. They all expressed how “different” the building was, in a positive way, to what they were used to in a traditional school. They noted that the transparency was distracting at first, but after a week or two, wasn’t distracting at all, but rather important in making them feel part of a bigger whole.

We made every attempt to provide an atmosphere where facilitators and students alike are inspired by their surroundings, where the building enhances rather than detracts from teaching and learning, and where everyone feels comfortable and “at home.”

**All school designs should strive to do the same.**



## Physical Environment





The Delaware New Tech Academy, a school-within-a-school at Seaford High School, came into being as part of the “reinvention” of Seaford High School. Along with the an 8<sup>th</sup> Grade Academy, a Naval JROTC Military Academy, a Marketing and Entrepreneurship Academy, and an International Baccalaureate School, this total school-within-a-school concept is designed to increase academic performance and provide various alternatives from which students may choose. **Initial anecdotal evidence indicates that students within the Delaware New Tech Academy are very favorable toward the New Tech curriculum and project-based learning.** When they become available, the results of state testing and New Tech recruitment will indicate the overall success rate in their first year.



## Results of the Process and Project

In order to continue strong community support of the overall program at Seaford High School and promote both the school-within-a-school concept and New Tech in particular, the Seaford Board of Education is holding their monthly community Board of Education meetings in the Presentation Studio of the Delaware New Tech Academy. In addition, the New Tech wing is also being used as a community polling place.



Vitruvius, sometimes called the "Father of Architecture," has written that all design should be *Firmitas* (strength, firmness), and *Utilitas* (use, function, commodity), and *Venustas* (beauty, delight). More often than should be, school designs exhibit *Firmitas* and *Utilitas*, but fall short on *Venustas*.

## Results of the Process and Project

This doesn't have to be. **Our students deserve better.**