

STEM

M A G A Z I N E

“What should I do
for the next 50 years
of my life?”



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Giving Teachers The Tools to prepare students for the 21st Century

USMA, West Point Elementary School / photo credit: Timothy Pillsworth, project engineer, New York District, U.S. Army Corps of Engineers.

By JoAnne Castagna, Ed.D.

Recently, COL. Matthew Posner, MD spoke at the ribbon cutting ceremony for a new state of the art elementary school at the U.S. Military Academy at West Point, New York, a school he attended as a child.



COL. Matthew Posner, MD.
Photo credit: COL. Matthew Posner, MD.

“Mr. Tom Robinson or Mr. R as he was known was one of my teachers. He without a doubt, taught me all that I really needed to know for a future in my current profession. He taught, he disciplined, he coached, he nurtured, he cared. He set high standards for us, academically and spiritually,” said Posner who is a USMA graduate and an Orthopedic Surgeon at Keller Hospital.

He continued, “One time our class spent a week at Lake Frederick under Mr. R’s care. We had outdoor classes, competed in field events, and took survival training courses. Why do I mention Mr. Robinson so prominently? To remind us of the most important link in the education chain: our teachers, especially our elementary school teachers who take on our kiddos as relatively blank canvases and help create

masterpieces.” Mr. R was invited to the ceremony and was in the audience.

Posner’s fourth grade daughter, Sarah-Jane attends the same elementary school. He said, “I hope my daughter can look back at her elementary school days with the same fondness of her teachers and experiences as I do. The new school gives our teachers a whole new set of tools to educate our kids with.”

This is likely to happen. The U.S. Army Corps of Engineers, New York District completed constructed on the school that is providing teachers the tools they need to teach students about STEAM or science, technology, engineering, art, and mathematics to prepare them for the 21st Century.

The Army Corps has constructed many of the structures on the historic 200-year-old military academy. Now it’s created a new school for the children of Army Soldiers and Department of Defense civilians who live at the academy.

Teachers at the school are providing students a STEAM education. To do this, they are using a myriad of technological tools and the school is designed to be flexible and adaptable to provide different kinds of learners the environments they need to succeed.

Posner said, “STEAM gets a bad rap, as many adults and kids are easily intimidated by math, science, and engineering. Many folks believe that rocket science is



Photo credit: JoAnne Castagna, Public Affairs.

capable of being understood by just few super intellectual kids. Making STEAM education available at young ages enables our children to see just how fascinating these disciplines really are and knocks down any perceived barriers that STEAM is too complex for the average child.”

He added, “The world has transformed into a technology-based economy. Our children must be comfortable on computers. They must be well-versed in science and engineering. In a way, the recent COVID-19 Pandemic has turned many folks into pseudo scientists, epidemiologists, geneticists, and pharmacists. STEAM is important in our everyday lives and it’s incredibly important to have the background in the basics of these disciplines.”

The school has five Learning Neighborhoods. Inside each neighborhood there are six learning studios, a teacher collaboration room, and a kitchenette that surround a central learning Hub. The studios can be used for large or small groups and



The center “Hub” area of one of the Learning Neighborhoods. Credit: JoAnne Castagna, Public Affairs.

one-on-one instruction. They are flexible spaces that provide teachers an opportunity to be more collaborative in their teaching and they will be able to group students with like interests, needs, and learning goals.

Another benefit of these spaces is that it makes the best use of time during a day. Instead of students leaving their neighborhoods to see different instructors, the instructors come to them in the neighborhoods.

The center Hub area serves as a seating and learning area and has a variety of different chairs and tables for students including couches, beanbags, and pillows.

Posner said that the center Hubs are his favorite aspect of the new school because he feels students should learn about collaboration.

He said, “It’s not an innate behavior to work effectively with others in small or large groups. The school is designed to promote this collaboration at the lower grades and really builds on this concept as they advance in grades.”

When training to become a doctor, he realized the importance of collaboration. “Medicine is all about collaboration and life-long learning. I remember the first thing that my anatomy professor told us on our first day of medical school.

He said, 'Everything you get taught over the next 4 years is already out outdated.' This really hit home for me. Learning never ends, no matter the profession you choose. And didactic-style learning is not an efficient or even a realistic way to learn as an adult. Exposing our children to collaborative learning and learning through multiple platforms is, in effect, getting them ready to be adult learners."

Sarah-Jane, agrees. She said she enjoys sitting in the collaboration spaces where the students do science experiments and read books.

Each Learning Neighborhood is equipped with the latest educational tools and the students are embracing them. Fifth grader, Daisy said, "I like the new school's technology. It is high tech, and it is easy to work with."

As you walk through the school there is an area you can't help but notice - the Library. From the hallway, students can peer down through windows into this high-ceilinged room that is fully stocked with books and well-lit from its large windows. Fifth grader, Alyssa thinks this is the best part of the new school. She said, "It is a very quiet and a calm place to read and concentrate."

Throughout the entire school there are interior soundproof windows, water bottle filling stations and partition walls that open and close like accordions, allowing the teachers to expand or limit the areas where they give their lessons.

The school not only teaches STEAM but applies it to save the school energy.

Throughout the school, there are LED light fixtures (Light-emitting diode). These lights have sensors that turn off or dim the lights depending on the amount of natural light entering the large windows and if there are people occupying the room.

However, natural light from the large windows is being used to the fullest. Light wells are also throughout the school to let in natural light. Besides sufficient light, adequate heat is also important, especially in this region.

To efficiently regulate the room temperature, a special pump system is being used. Instead of having one big boiler for the entire school, the building will have three smaller ones.

If heat is needed, one of the boilers will run up to 30-40 percent of its capacity. If additional heat is needed, the second one turns on and so on. They will ramp up or down depending on the need. "Smaller boilers work more efficiently when they don't run at their full capacity and they last longer," said Pillsworth.

Outside there are playgrounds for the different age groups, an outdoor patio for art classes and an amphitheater for instruction, gatherings, and performances. Sarah-Jane said, "We really like the playground and all of the space.

One thing students observed in the beginning, were trees being removed to make space for the new school. The students were concerned that this would harm wildlife. The teachers saw this as a real-life learning opportunity and arranged for a wildlife expert to speak with them. Together they came up with solutions to safeguard wildlife.

Not only did the students interact with wildlife specialists, but also with Army Corps engineers and architects who performed studies with them and showed them maps and print outs of the project. This experience has made many students extremely interested in architecture and planning.



Photo credit: JoAnne Castagna, Public Affairs.

The Army Corps also arranged to have speakers for the students. Civil engineers, architects and environmentalist specialist spoke with the students and explained what's involved with planning and constructing a new school. One of the speakers explained how soil is removed to prepare for the building. From this the students learned about slopes and the differences between different soils and terrains.

As construction progressed on the project and the school's interior was being worked on, the students wanted to play a role in the designing of their Learning Neighborhoods.

They selected the color schemes, the furniture for the center Hub area, and they voted on an animal mascot to represent each Learning Neighborhood.



The school's interior is designed to be open and airing and to bring in the vibrance of the region.
Credit: JoAnne Castagna, Public Affairs.

They chose animals indigenous to this region including the Snow Owl, turtle, Black Bear, and raccoon. When students enter their Learning Neighborhood, they see a mural of their mascot displayed at the entrance.

Now that the school is completed, it continues to educate the students about STEAM careers.

Just as the students were involved during the construction of their new school, they were just as involved in the ribbon cutting. Students attended the ceremony from their Learning Neighborhoods using their new video conferencing system as a COVID-19 safety precaution.

Besides Posner's speech, Sarah-Jane and other students spoke to the audience and took groups on tours of the Learning Neighborhoods. Their involvement in their school will continue because of the tools it provides that will prepare them for the 21st Century. It already has for Sarah-Jane. The new school already has her thinking of the future. She said, "I want to be a marine biologist when I grow up. I see my dad taking care of people every day. I want to do the same thing, expect with animals that live in the ocean. The science classes and labs in the new school are fun. We are just starting to use them!"

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Ribbon Cutting Ceremony for the new West Point Elementary School. Credit: West Point Elementary School.

