

“What Does All of this Talk About STEAM Mean?”

by: Dr. James Longo, Superintendent

Over the course of the past few years Ashford School has been going through some significant changes in its curriculum and instruction design. We have been publicizing ourselves as a STEAM school. In newsletters, fliers, and other publications STEAM is defined as a school that places special emphasis upon science, technology, engineering, arts, and mathematics. That definition seems almost like business as usual because that list includes pretty much all of the subjects we would expect a school to emphasize. One might ask, how does that design make us special or different? I am going to answer that question in two ways. First by describing the philosophy behind STEAM, and second by telling you about our specialized resources, faculty, and curriculum.

Before I get into the subject-by-subject highlights of our resources, curriculum, and instruction, I would like to present the complex philosophy that our school model is built upon. When we plan our STEAM curriculum, and develop STEAM lesson plans, we do so utilizing a philosophy rooted in how we can teach students to think and solve real world problems. We consider the way a scientist, engineer, artist, or mathematician thinks as we design our curriculum. For example, science is about inquiry, and we are committed to teaching our students to think like a scientist with curiosity and inquisitive minds when they are faced with solving a problem. We also believe that engineers approach problems with a unique mindset that is focused upon structure. How things are structured to be what they are, and how improving that structure can improve usefulness or effectiveness. Being able to think like an engineer is a wonderful asset when one is faced with real world situations. Furthermore, the self-expression and creativity of the artists mind has always been accepted as the key to the great inventions and cultural advances of most societies. We will also be emphasizing the artist's mindset when we design our curriculum and write our lesson plans. That is, every student will be asked to focus upon their unique way of seeing the world, and how their uniqueness can be an asset in solving real world problems because they see and put things together in an expressive and creative way that is unique to them.

That is a quick summary of some of the key elements of the philosophy that our STEAM school is built upon, and how we strive to instruct our students in the unique way that scientists, engineers, artists and mathematicians think. Now I will examine how we expect to deliver that philosophy through a subject-by-subject analysis of our curriculum and instructional design and practice.

First, a STEAM model of curriculum and instruction is interdisciplinary in its structure. That is, a teacher designing lesson plans is supposed to be thinking about those core subjects, and integrating the essential aspects of each whenever possible. Then, when they deliver that lesson plan they are expected to point out the interaction of those content areas whenever it is possible. The teacher highlights the math in a science concept, or the art in a mathematics problem. Interdisciplinary

teaching is not a new concept, but while that is generally true, in a STEAM school it is expected to happen with most every lesson and every time it is possible. It is a matter of frequency and consistency. So, the first rule of a STEAM school is to integrate science, technology, engineering, arts, and mathematics whenever possible.

Second, we provide opportunities to study each of those subjects with special attention to more resources in each subject than you might find elsewhere. For example, we have science labs for use by every grade in the school. We have four rooms with special science supplies and equipment, and four teachers with special skills who deliver a real science program to all of our students. This is far beyond what a school without a STEAM design would do.

Third, we carry science even further with a real robotics program. We have a room that is a true robotics laboratory. It has all of the supplies and equipment needed for students to learn about robotics, build and test robots, and apply robotics to everyday science concepts. The robotics course is staffed by a teacher with special skill and interest in robotics, offers an after school robotics club, and is taught in a room with a real competitive robotics arena. The robotics experience that our students are exposed to ties science, engineering, and technology together in a way that few other schools do. This is another characteristic of our STEAM curriculum and instruction model that sets us apart from schools that are not built upon a STEAM design.

Fourth, our school has technology second to none. We have several computers in every classroom for student use, two full computer labs, SmartBoards in every classroom, the full robotics lab, a special computer supported writing center in the media center, and we offer virtually any foreign language that a student may elect to study through technology in our media center. We also have carts full of laptops and IPADs available for every teacher in the school to bring technology into their classroom. We have a 3-D printer, and a fully supported electronic music laboratory for students to study music through the use of a MIDI music experience. We see technology as a great tool that every student should be comfortable and familiar with by the time they leave our school, and support that philosophy with up-to-date quality equipment. We teach the basics of technology, and fully integrate its use into our core curriculum. That is how we deliver the "T" in our steam curriculum.

Fifth, I mentioned our MIDI music lab when I was presenting our technology program. This is a classroom outfitted with seventeen workstations, each of which contains a computer, an electronic keyboard, speakers, and a special software program for the study and creation of music. The arts are the "A" in STEAM. Music is one of our premier programs. The music program at Ashford School has always been one of the best in the region. The jazz ensemble even played at the Connecticut Association of Boards of Education conference a few years ago. We have a full range of vocal and instrumental music ensembles and boast of a top-notch music program. As part of the STEAM design it has taken another leap forward. The addition of this

MIDI lab has given our music staff and students access to music in a way that will not be found in a school that has not committed to a STEAM curriculum.

The Arts are also addressed through the study of dance in physical education, drama and theater in language arts classes, and a new visual arts program that will be integrating visual arts into every subject throughout the year.

Sixth, we are offering a new daily schedule and an after school program that is designed to provide students with many options to study areas of personal interest in all STEAM content areas.

Hopefully this more detailed explanation of STEAM as a foundation for our curriculum and instruction at Ashford School has been helpful in providing you with an understanding of what makes our school special and why we are so excited about the direction our school has taken in the past few years. Ashford School is a gem that is something our community can be proud of, and a place that gives our students an exemplary education. We are excited about how we prepare them to compete in a complex world after they leave us, and move on to high school.

In closing, I once again invite you to visit our school. We will take you on a tour and show you what I have been talking about. Also, if you have any questions give me a call. I am available to answer your questions and tell you more about our wonderful school.