It took some convincing for Marlborough High School freshman Danya Gaudet to warm up to the idea of enrolling in a new early-college program known as STEM - for science, technology, engineering, and math.

But her mother encouraged her to try it.

“In the fall of last year, STEM was just an idea,” said Veronica Gaudet, Danya’s mother.
and the district’s human resources director.

“By springtime it had come to fruition. By the time they rolled it out to students, eighth-graders had already made their schedules, but I thought it would be a good program for her.”

Kicked off in Grade 6 at Whitcomb Middle School and Grade 9 at Marlborough High this fall, STEM’s core is engineering, but its teachers work to integrate the program’s pillars of project-based learning and problem-solving for real world applications across all subjects.

Students frequently work in groups and are encouraged to think outside the box. A ninth-grade STEM class might involve students using computer software to design a 3-D object as part of a project on transportation. Or it might include a classroom visit from a professional working at Intel Massachusetts or Raytheon, or an internship experience with another industry partner.

So far for Danya, it’s working out. Her favorite part of the program is seeing the connections being made among her different subjects.

“I really like how we’re talking about the same thing” in different classes, with the current topic transportation safety, said Danya, who hopes to be a zoologist.

“History started with the Scientific Revolution. In English, we’re learning how to write different essays so we can do our reports on transportation. In science, we’re talking about motion, and we’re learning about graphing in math. I’m starting to understand how things are linked.”

The district is the first of six in the state to implement the STEM early-college program. Marlborough will add class levels each year until grades 6 through 12 are included. It will also allow juniors and seniors to take up to 16 college credits at Framingham State University, a longtime partner of the Marlborough district.

Another district partner is a national nonprofit organization, Jobs for the Future, which developed the early-college model for underserved youth. Marlborough is one of about 250 schools in the country using the model; roughly 80 of these are STEM schools.

The STEM program is funded by a Race to the Top grant, part of the $250 million
award that Massachusetts received in August 2010 from the US Department of Education for being the highest-scoring applicant in the national competition. Marlborough’s share of the award is $30,000 per year for four years, which high school assistant principal Dan Riley said does not cover all of the operating costs but was enough to get the program started.

“The ultimate goal is to produce graduates that the state and country have yet to see,” said Riley, who serves as the local STEM administrator. “We want to increase the number of kids with STEM educations and guarantee their success in college.”

Proponents of STEM education speak of the importance of ensuring that the United States remains competitive in the global marketplace, producing the next generation of innovators and enabling students to have well-paying careers.

One of the program’s aims is to have the Marlborough students ready as high school juniors to take college-level courses at Framingham State, said William Rigney, the STEM instructional specialist and a 38-year veteran of the district. “We’re ramping up the curriculum so that students can have the necessary skills to be successful,” he said.

Freshman Jason Charbonneau, who has always been interested in engineering, is a big fan of the program.

“It’s certainly different and a lot more hands-on,” Jason said. “It’s a lot less generic than normal classes are. We’re not handed worksheets. We’re figuring out on our own solutions to problems, with teachers there to help us every step of the way.”

Jason’s mother, Donna, has been impressed by the program.

“At this point, it’s even more than I expected in terms of enthusiasm from the staff teaching and a different enthusiasm in Jason,” she said. The students “have the ability not just to attend normal class, but to put a lot of what they’re learning into life skills.”

This fall, 75 ninth-graders and 117 sixth-graders are part of the STEM program, overseen by six teachers at Whitcomb Middle School and six at Marlborough High.

All students were eligible to apply last June, and every student who applied for this school year was accepted.

“It’s such a new program, and it’s building as we go,” said Veronica Gaudet, the district administrator whose daughter is taking the program.
“They’re pioneers,” Gaudet continued. “How or what junior and senior years look like hasn’t been discussed just yet, but I have faith in the team that has established this. I’m putting my daughter’s education in their hands, and in that this program will evolve the way it needs to.”