CLASSROOM CHRONICLES

PROSPEROUS PATHWAYS

How an Ascension Parish Teacher Prepares Students for a Future in STEM

DEPARTMENT of EDUCATION
Louisiana Believes

Over the next 12 years, Louisiana and the nation will see a surge in the number of job opportunities available in the fields of **Science, Technology, Engineering, and Mathematics, also known as STEM.** In order to better meet workforce demands, the Louisiana Department of Education, the Louisiana Board of Regents, the LaSTEM Council, and the Governor's office have teamed up to ensure Louisiana's students have exposure to STEM courses and credentials, starting in elementary school and continuing through college. **Louisiana's STEM Pathways** are specialized sequences of eight courses. They emphasize connections across the individual STEM disciplines alongside "employability skills" such as problem-solving, communication, collaboration, research, and project planning. They are developed and implemented by K-12, higher education, and industry leaders. Students who successfully complete a STEM Pathway leading to industry credentials and/or college credits graduate with a STEM diploma endorsement.

Veteran teacher **Kayla Bates, of St. Amant High School in Ascension Parish**, teaches the school's first course in the **LSU Pre-Engineering Certification Pathway**, Intro to Engineering. We recently met with Bates to discuss her experiences with the pathway, student reactions, and advice for those interested in STEM Pathway offerings.

Q. How did you become involved in STEM Pathways?

A. In the fall of 2017, my principal asked me if I would like to attend an event at Shell in Geismar, La., called "Introduce a Teacher to Engineering." I jumped at the opportunity. I thoroughly enjoyed the experience and could not wait to tell my administration and students about everything I learned and saw. One particular part of the day that stands out to me was an activity they prepared for us to complete in interdisciplinary teams. Each teacher present played the role of either an electrical, mechanical, or chemical engineer, and we were presented with a problem that those three types of engineers would have to solve together. They brought in their own engineers to guide us in solving the problem and provide insight on what that problem actually looks like in their plant. It was eye-opening to see how vital teamwork and communication were to achieving success. After completing that activity, we participated in a panel discussion with several engineers and supervisors about how we can better prepare our students for these jobs, and I walked away with a desire to learn more and do more to better prepare, inspire, and motivate my students.

Later that school year, my school system decided it would roll-out the first course in the Pre-Engineering Pathway–Introduction to Engineering–to all four high schools in our school system for the 2018-2019 school year, and my principal asked me if I'd be willing to go through the summer training to teach it. Again, I didn't hesitate.

Q. How was the first year of Intro to Engineering received?

A. The first year I taught it, I had to recruit students to take the course because they didn't know about it until after they had already scheduled for the school year. I ended up with 15 students in the spring of 2019, with about half of those students having an interest in engineering at the time they signed up.

Q. What reactions did you receive from your students?

A. All of my students, even the ones not interested in engineering, said the skills they learned would benefit them in the future. It was rewarding to see students taking ownership of projects and problem-solving with their peers. There were often times when my students asked to bring home materials because they wanted to do more than what was being asked of them.

Q. Can you describe some of the skills students learn throughout this course?

A. Students acquire many skills that are applicable to any career they will pursue, not necessarily just one in engineering. They learn how to work in teams, as all projects are done collaboratively, with groups changing for each project. They learn how to communicate their work to others through oral presentations and written reports and learn problem-solving skills through the lens of the iterative engineering design process. They learn time-management and work ethic through project deadlines and group grades and are introduced to the ethical decision-making process as it pertains to ethical dilemmas in the field of engineering.

Q. Have you noticed an increase in student interest this year?

A. Yes, very much so. I had about 35 students sign up for the course, but due to scheduling conflicts, I ended up with 20 students for the spring semester.

Q. What has been the response of fellow educators?

A. This past summer, I led LSU's Intro to Engineering training for teachers who would be teaching the course for the first time this school year, and it was enlightening to see how excited they were about the opportunities and experiences they'd be bringing back to their students.

> **"AT MY SCHOOL, TEACHERS HAVE SEEN THE PROJECTS MY STUDENTS ARE WORKING ON AND HAVE BEEN AMAZED BY WHAT THEY HAVE CREATED IN SUCH LITTLE TIME."**

For example, my students have designed and built prototypes of robotic hands while studying biomedical engineering and bridges when studying civil engineering. When studying electrical engineering, they learned how to wire different types of circuits and then later learned how to program those same circuits when studying computer science. They've asked me lots of questions about the class and have been impressed by what the students are required to do. They have commented on how useful such a class could be, and those with students in high school or almost in high school have said they would love for their children to take a class like the one I am teaching.

KAYLA BATES
ST. AMANT HIGH SCHOOL
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Q. What advice would you give to educators interested in exploring STEM Pathway offerings?

A. Explore the links in this article to learn more about Louisiana's STEM pathways. Implementing a STEM pathway will provide many benefits for your school and district, for you as a teacher, and most importantly, for your students! If there aren't any STEM pathway courses being implemented at your school, I'd encourage you to talk to your administration about your interest to teach such a class. Teaching one of these classes is no small undertaking, and sometimes it just takes administration knowing there is someone willing and passionate enough to put in the work to make these opportunities available to students.

Learn more about the Louisiana STEM Initiative.

For full Pathway information, visit the Jump Start Graduation Pathways webpage.