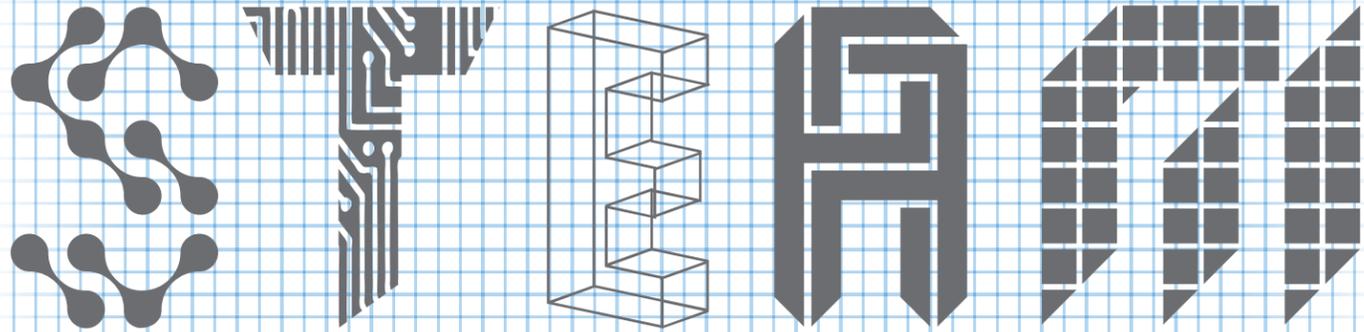


TECHNOLOGY ISSUE



SCIENCE, TECHNOLOGY, ENGINEERING, ARTS, MATHEMATICS

STEAM is an acronym for Science, Technology, Engineering, the Arts and Mathematics. The idea of emphasizing these subjects in delivering the curriculum has been driven by the business community, with the goal of preparing an agile and competitive workforce. In the real world, content knowledge is interwoven, layered and sophisticated, not experienced in isolation such as in traditional education settings (separate math time, separate science time, etc.). In Mrs. Sameer's STEM class, students completed projects that involved building, experimenting, designing and testing. Each of the projects involved various concepts from the fields of Physics, Chemistry, Engineering and Math. The assignments were designed to develop students' critical thinking skills and help them learn the most difficult concepts in the scientific world through a hands-on approach. Students also gained technology skills to effectively actualize innovative ideas as when they designed blueprints using an iPad App called *Sketchbook Pro*. After only two years, this course has already been described by students as one of the most fun-filled and enriching courses offered at Saint Joseph Prep! Several projects are described on these pages.

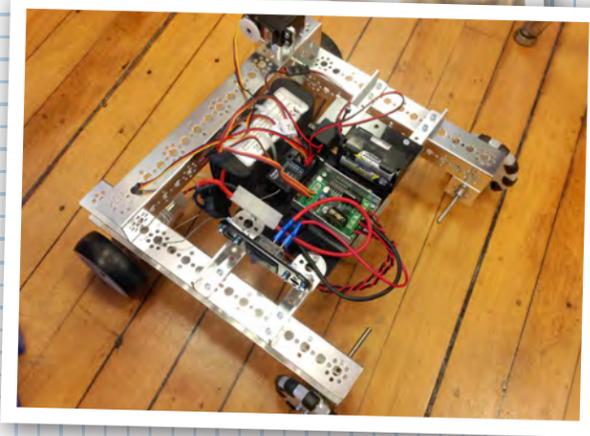


NEWSPAPER TABLE PROJECT

The purpose of this project was to build an eight-inch tall table that could hold an eight-pound textbook out of eight sheets of newspaper, one thin piece of cardboard, masking tape and scissors. Through this project students explored the concept of a triangle being the most stable shape and the relationship between surface area and weight distribution. In order to complete the project, the class was divided into groups of three. Students mimicked the procedures followed by engineers by first brainstorming ideas on different designs that could meet the requirements of the project, designing blueprints according to accurate measurements, building the table, conducting a mock test, analyzing the weak points and fixing them for the final test.

THE ZIPLINE PROJECT

The students were charged with building a carrier that could travel along a zipline and drop a marble on a target placed on the floor. Concepts explored included **speed, acceleration, Newton's First Law** and **Trajectory Motion**. In order to complete the project, the class was divided into pairs; each pair was provided with two styrofoam cups, one paper clip, a piece of string and a marble. The students first discussed various design ideas that could meet the requirements of the project. Then, they developed blueprints according to accurate measurements, built the carrier, conducted a mock test, analyzed the weak points and finally fixed them for the ultimate test.



PROJECT RANGER BOT

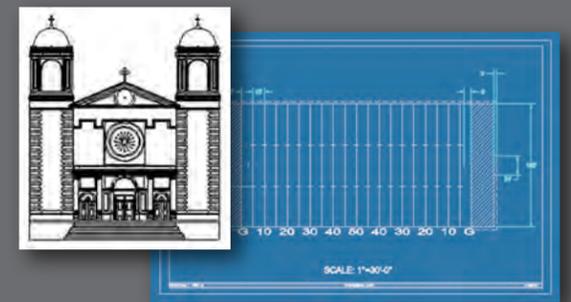
The purpose of this project was to build a robot that could move around and pick up a coffee cup; students explored **force, acceleration, torque, center of mass, electricity, conservation of energy** and many other engineering concepts. Acquired skills included using the hex key tool, as well as connecting circuits and other electrical components. Students were grouped by pairs, and each pair was provided a parts kit by Tetrax. The process involved brainstorming design ideas, developing blueprints, building the ranger bot, conducting a mock test, analyzing the weak points and resolving them for the final test.

DIGITAL DESIGN FOR THE 21ST CENTURY

Highly recommended for students considering careers in Engineering, Architecture, and Computer Animation, **Computer-Aided Design (CAD)** has been an exciting addition to our STEAM curriculum for the past two years. Offering our students an opportunity to develop the technical skills necessary to effectively create and draft technical designs for a variety of products, the course concentrates on drafting concepts and the application of engineering and industrial standards within the design process. Students in the course also explore mechanical, architectural, and presentation graphics, 3-D computer applications and technical illustrations.

Mr. Tice, a career-changer, transitioned from the field of engineering to pursue his passion for teaching, and has taught this highly regarded class for more than 14 years.

Hoping to broaden the reach of the fine arts department into a practical and growing field of influence, the **Graphic Design** course teaches its students the skills and methods of graphical communication. In a field that includes everything from traditional print design to digital web design, there is a growing need for experienced graphic designers now more than ever. Taught by Mr. Shiner, who has more than 25 years experience as a working designer, the ability to seek creative solutions to relevant design problems is the core critical thinking element of the class' curriculum.



To read about THE ARTS at Saint Joe's Prep, go to page 10.