



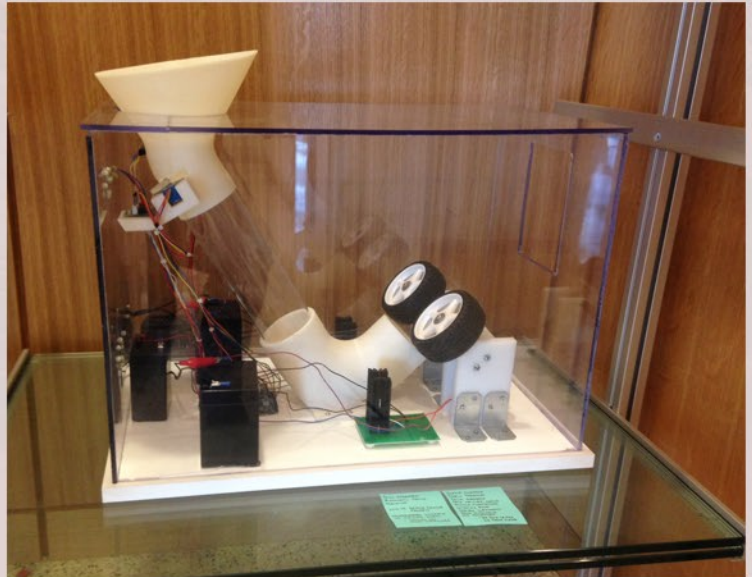
Trinity University Adds Fortus 3D Printer to Engineering Lab

Trinity University is a small, liberal arts institution located in San Antonio, TX. Focusing primarily on undergraduate education, the institution's Engineering Science program consists of about 150 students, and graduates between 25 and 40 students per year.

Design is an integral part of Trinity's Engineering Science curriculum, and the eight-semester design sequence requires students to enroll in a design course each semester. Right from the start, students gain competence in topics that include 3D modelling and visualization. However, until recently, the question of "what do we do with our skills in Creo" often raised by students did not have a convincing answer.

In January 2014, as part of their move into Trinity's newly built \$132 million Center for the Sciences and Innovation, the Engineering Science department purchased two 3D printers. The Fortus 250mc was positioned front and center in the new facility, as it is located next to an interior window that is visible to a well-traveled central corridor. Although the full potential of both printers have yet to be realized, the Fortus machine has literally revolutionized Trinity's senior design sequence, allowing students to fabricate parts containing complex curves and surfaces for their designs.

Until recently, students had felt somewhat frustrated by the limitations imposed by traditional manufacturing processes, as well as budgetary constraints. While they could easily visualize and draw the parts they needed on Creo, many of those parts could simply not be fabricated, given the budgetary realities and time constraints of the senior design course. The project shown is a "dog-activated automatic ball throwing machine" that could not have been produced without the Fortus 3D printer. The integrated gravity feed (funnel) and motor mount are shown towards the top of the unit, and a curved section that propels the ball upward are located on the bottom of the machine. Both of these parts went through at least two iterations of design-build-test, and the resulting prototype was both operable and robust.



Dog-actuated ball throwing machine. The dog is trained to put the tennis ball into the 3D printed funnel -- once the way is clear, the ball is dropped through the 3D printed pipe, and the wheels propel it out through the clear tube, allowing the dog to chase and retrieve it.