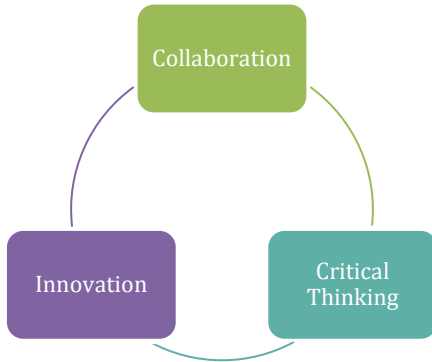


STEM School Chattanooga

11th Grade PBL Unit Plan Template

Unit Quarter: 2nd

Title: Prosthetic Design and Fabrication



Learning Target Topics

Collaboration: Working with other people on a project or problem to achieve a shared goal.

Critical Thinking: Accessing, using, and applying information and knowledge.

Innovation: Using creative thinking to construct something new and valuable.

Grade Level	11 th Grade	Unit Length	9 Weeks
Industry Partner	<ul style="list-style-type: none"> Gerald Stark, Ottobock Healthcare 		
Unit Overview	<p>STEM student teams will research two problem areas that could benefit from 3D printed prosthetics and/or advanced materials. The teams will generate and analyze candidate solutions using criteria formed through their research. The teams will design and fabricate prototypes for the two problems areas using 3D printers and other methods. For the industry partner, the focus is on the thoughtful, creative design of 3D prosthetics to solve a problem. For the STEM School, the focus is on the critical thinking skills demonstrated by the student teams.</p>		
Unit Essential Issue	<ul style="list-style-type: none"> Project: <i>Design and solve two problems areas using prosthetics.</i> 		
Kick Off Event	<p>Kick Off: TBD (Oct 14-16) Gerry Stark will share his experience working on upper extremity prosthetic design and product development at Ottobock and Fillauer. Mr. Stark will discuss the challenges of designing prosthetics for patients. He will share slides and a 6-minute WebMD video on the 3D printing revolution in medicine and prosthetics. He will define the parameters of the project as discussed above. Potential problem areas include: body-powered hand or hook; alternative thumb-sweeping prosthetic; “work hand” for dirty/wet conditions; prosthetic for farmer; prosthetic for mountain bike rider; Jordan Thomas Foundation for Kids; 3D scanning for custom prosthetic; and articulating hook prosthetic.</p>		
Culminating Events	<p>Presentation Day: TBD (Dec 14-17) The student teams will present their designs to the project leads and any personnel they choose to include in the judging panel. The project leads will evaluate the designs and provide constructive feedback to the teams.</p>		
Common Assessment	<p>Students will be scored using the Association of American Colleges and Universities rubric for Critical Thinking Skills. All 4’s will equate to Advanced, scores of 3 and 4 will equate to Proficient, and any scores below a 3 will equate to Below Basic.</p> <p>Items that will be used to score student work:</p> <ul style="list-style-type: none"> Assignments (Plans, Weekly Status Reports, Design Process Work Products, etc.) Presentation. Products (3D printed prosthetics) 		