
Amp It Up! Engineering/Technology and Industry Lesson Extension

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School and District: , Lynn English High School, Lynn Ma

Course Name: Anatomy and Physiology

Lesson/Unit Name: Tool creation/ usage

Science or Education Topic(s): Closing an open tube

Engineering Technology Industry Related Field/Activity: Instrument design assembly and assessment

When Taught: Toward the end of the year, with the digestive system (lesson created April 2016)

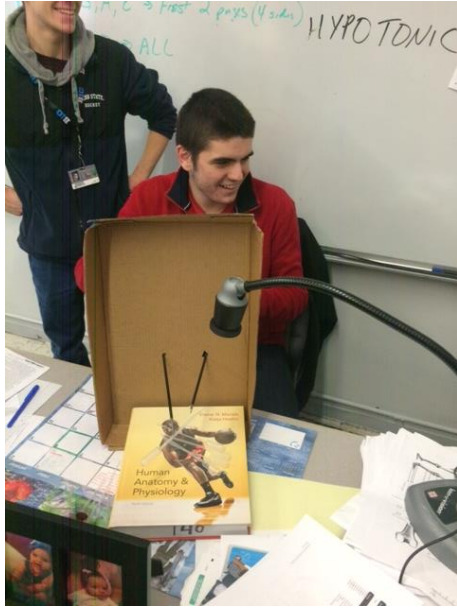
Abstract:

Students will design a tool that can pass through a half inch opening and pinch a tube closed. Students will be required to provide their own materials, submit materials lists, an assembly procedure and test their product. After, students will demonstrate their work. In the end students will be introduced to the tools created by the Microline Surgical Company, located in Beverly and to their benefits in similar situations to the ones their tools were designed for.

Objectives and assessment: Using the table below, identify at least 3-5 learning objectives (content and/or pedagogical) and describe how each will be assessed.

Objectives <i>By the end of this lesson/unit, the students will be able to:</i>	Assessment <i>How was the objective assessed? List the example of formative or summative assessment.</i>
Create a fully inclusive materials list	Formative
Create a procedure for assembly	Formative
Create a tool to perform the desired function	Formative
Evaluate the tool they created	Summative

Engineering/Technology Link:



1. How did you *introduce* engineering/ technology concepts or the company/industry focus in your course?

Described the engineering design process

Engineering design challenge related to industry

2. After introducing the concepts, what did/will the students do to explore and apply the engineering/technology and industry specific concepts? (include information about the actual activity students did, discussions they had, or instructional strategies you used)

See the lesson outline related to the tool design aspect of the lesson

Level of Inquiry: Which of the following best describes the level of inquiry (adapted from Bell 2005) you used for this lesson/unit?

Guided inquiry: Instructor provides question. Students design procedure and determine the results.

Lesson Extension Plan:

Title/Topic: Creating a tool to perform a needed function
Time (minutes): 2 – 3 class periods
Company Name and brief Description: Microline Surgical, A leading creator of laparoscopic tools. Their students are making their version of the tool before being introduced to the ones the company makes.
Overview of the Lesson Engineering design
Standard(s)/Unit Goal(s) to be addressed in this lesson: following the engineering design procedure
Essential Question(s) addressed in this lesson: Inclusive creation and design of tools to solve an internal problem, being minimally invasive

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Objectives	Create a tool to perform a function, create a materials list and a procedure to repeat the production, test the product
Link to Industry:	Manufacturing and materials
What students should know and be able to do before starting this lesson	
Instructional Materials/Resources/Tools provided by the students	
Lesson Delivery	
Lesson Opening: a person is having a problem internally that needs your help. You need to pinch of a leaking blood vessel to prevent loss of blood. You may only enter through a half inch incision.	
During the Lesson (activities/labs/challenges) students first need to design and plan their tool. They must create a resource list of any tool they may use in creating their product. They will gather those materials from both me and their homes and build their tool the following day during long block. Their materials list must be updated and their procedure must be completely thorough to be recreated by anyone. They in the end must demonstrate their product to me. They will be assessed on the ability of their product partially.	
Lesson Closing: Students will be introduced to the Microline Surgical Company in Beverly. They will get a chance to use the actual tools created by the company and see how important repeatability of procedure and functionality of the product are to the company.	
Assessment	
Student Assessment: Students assessment will come in 4 parts, their materials list, their procedure, their tool's functionality and assessment of their tool.	
Delivery Assessment: NA	