



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
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What Makes Things Move? Levers in the Human Body

Guide for Curriculum Unit 14.04.04
by Alina Britchi

The human body is beautifully complicated machinery composed of a number of physical systems. The main purpose of this unit is to bring a new approach to teaching physics, focusing on simple machines from the perspective of the human body. Additionally this unit emphasizes how understanding the basic physics concepts is essential in real life and applied in building good mechanical models that further improve our understanding of the structure and function of the human body and enhance our life style.

After a general background on simple machines and identification of some examples within the human body, students will be involved in a hands-on activity that will require them to build a prosthetic arm able to lift a certain amount of weight. This will be an inquiry-based activity where students have the liberty to choose how far from the hand the fulcrum (elbow) should be, what material to use for the arm and how far from the fulcrum the "muscle" that pulls the arm up should be.

At the end of the activity students should be able to discuss the importance of:

1. prosthetic arm material (strong but light)
2. the length of the arm (the longer, the better, but should take into account the regular size of the human body)
3. the length of the lever formed by the fulcrum and the muscle that takes the load
(taking into account the physics of the lever and the anatomy of the body)

(Recommended for Physics, grades 11 and 12)

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