



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
2017 Volume II: Watershed Science

Evapotranspiration: Gravity Defying Water

Guide for Curriculum Unit 17.02.01
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This unit focuses on the movement of water through a plant and how it is driven by transpiration at the leaf. The unit is applicable to both a physical science classroom as it focuses on the properties of water as well as other physical science topics such as pressure, fluid flow, and surface area to volume relationships. The unit is also applicable to a biology curriculum as it covers the phenomenon of water movement through a plant. Many structures and adaptations are discussed that allow plants to achieve this process. The unit dives deep into the properties of water and how unique plant structures take advantage of said properties to move water from the ground to heights over 300 feet. There are classroom activities included as well as demonstrations mentioned throughout the text.

The phenomenon, or hook, for this unit is the movement of water against the pull of gravity, in particular to the top of our giant trees such as the *Sequoia sempervirens* (giant redwood) which reach heights of over 300 feet. Teaching around a phenomenon is the current trend with the States adoption of the Next Generation Science Standards (NGSS). The use of water transport in plants is an effective phenomenon because not only is easy for students to grasp the oddity of water moving against gravity but also because the understanding of this action requires students to grasp scientific concepts from multiple disciplines.

(Developed for Phy-Chem, grade 9, and AP Biology, grade 10; recommended for Biology and Earth Science, grades 9-10)

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