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Curriculum Units by Fellows of the National Initiative
2020 Volume IV: Solving Environmental Problems through Engineering

Engineering and Testing a Soil Moisture Sensor

Guide for Curriculum Unit 20.04.12, published September 2020
by Jhansi Sunkerneni

With the ever increasing human population, the need for water cannot be underestimated. It is today's pressing issue and we need to act on it now, to conserve water. Future water shortages can lead to drastic impacts on food production, other ecosystems, and the environment. If water conservation is not practiced, the world could face irreversible consequences. In this curriculum unit my goal is to introduce the need to conserve water, the impacts of water shortage problems, how working as a team can help towards solving this global problem, and how to build and test a soil moisture sensor that can benefit farmers by not having to water farmland when it is already moist.

This unit is built to help teachers who are new to the field of Engineering to basic background knowledge of what they need to know in order to help their students build an electronic device. Students will learn about the engineering design process involved in building a soil moisture sensor. They will then learn about basic electronic components and their function. Then, they will then apply their knowledge, to build a basic circuit to light up an LED bulb. The end goal is to build an electronic soil moisture sensor with their teams, test it, analyze and communicate the results, and essentially use it in their backyards, and be ready to experiment to build other electronic devices. This unit was developed for Engineering Design, Grade 7 students.

(Developed for Science, grade 7; recommended for Science, grade 7)