Science Societies

Teaching water movement in soil with hands-on activities

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Texas A&M undergraduate Soil Science major Ariana Lazo compares water movement from clay to sand and sand to clay in small water columns. Photo courtesy of Andrea Fonseca.

The flow of water through soil is influenced both by soil's physical structure and the pore network it creates. Small pores hold water more strongly than large pores; this fundamental concept appears easy to understand, but students often find it difficult to apply to predict water flow, especially when porosity changes within the soil profile.

In an article recently published in *Natural Sciences Education*, researchers developed hands-on water flow activities for undergraduate soil science students that utilized small, plastic columns to test different scenarios of water flow. These scenarios included, for example, water flow from clay (i.e., small pores) into sand (i.e., large pores). Student feedback on the activities, as well as their performance on water flow exam questions, were compared with prior semesters when instructors used demonstrations to teach water movement concepts.

Students enjoyed the hands-on nature of the activities and felt it helped them better understand concepts. Furthermore, a higher percentage of students correctly answered exam questions related to water flow following the experiential activities compared with those who watched demonstrations. Overall, the findings suggest that providing students with an interactive tool to evaluate water flow under different scenarios increased student engagement and improved their learning of water movement concepts.

Dig deeper

Howe, J.A., & Barrientos-Velazquez, A. (2020). Teaching water movement in soil through experiential activities. *Natural Sciences Education, 49*, e20012. https://doi.org/10.1002/nse2.20012

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