Pros (and Cons) of Virtual Labs

Explorelearning

School labs are places where students traditionally get “hands-on” with materials, doing scientific experiments themselves. Educators have argued for years that these experiences in the lab are invaluable. When students can observe the reaction of the chemicals or see the actual inside of a frog, they understand concepts better than if they simply read about them.

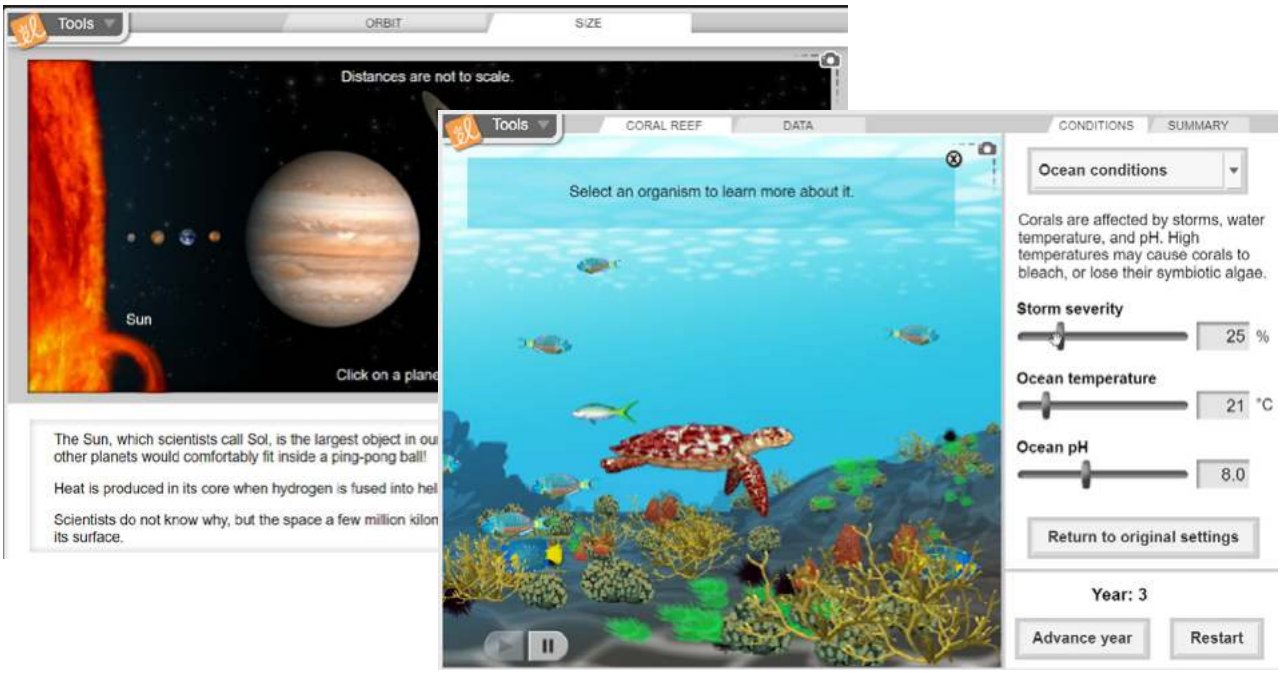
Unfortunately, schools must deal with budget cuts and limited resources every day, and science labs are expensive to maintain. If students can learn just as much doing virtual labs with the computers they already have, many schools would be happy to switch and lower costs. But what is lost and what is gained from switching to virtual labs?

Going beyond beakers and dissections

While experience using materials in science labs can be helpful for students, not everything students need to learn can be done in a school laboratory in the first place. Students cannot experiment with nuclear fission or the Big Bang Theory or DNA in school labs, and don’t have enough time during the semester to learn how natural selection or the food chain works. Consequently, the investigation of those important ideas must be done through lectures, textbooks, videos—or online simulations like ExploreLearning Gizmos.

Online simulations allow students to experiment, test and really understand concepts. **Simulations allow students to try various “what-if” scenarios, running the same experiments again and again while just changing a variable each time. And all this exploration can be done in the class time allowed.**

With over 400 math and science simulations in the ExploreLearning Gizmos library, students can knock a castle wall down with a trebuchet, dive below the sea to investigate the dangers to coral reefs, explore the universe, or use moths to investigate natural selection. All Gizmos come with a teacher guide and lesson materials that help educators and students go deeper.



No lab coats (or costs) required

In a virtual lab, no one gets their hands dirty. There's nothing to clean up and there's no need to set aside a separate room with sinks and equipment. A subscription to a virtual lab program costs money, but so does stocking a lab with materials. **A virtual lab also easily transforms from a science lab to a computer lab that can be used for other subjects. This flexibility can be especially helpful for schools that don't have the resources to build a lab.**

Computer-based assessments

Computer-based assessments are moving beyond traditional multiple choice questions and becoming more interactive. The new assessments require students to find their way to the correct answer by moving data points, dragging objects, or adjusting aspects of an image. Students must do more than "provide an answer" or select vocabulary word definitions; they have to actually understand what the questions themselves require, and provide the evidence and reasoning needed to support their answers.

The test questions look a lot like science simulations, so using Gizmos in the classroom helps students become more comfortable and gives them a real leg up on standardized tests. **Gizmos help students go deeper as they explore, analyze data and apply new concepts, and really understand the material.**

Why choose?

A combination of hands-on and virtual simulations is definitely preferable for students and schools. Online simulations can help prepare students for lab experiments, leading students more readily to an "ah-ha" moment. Students can go deeper in simulations, making mistakes and thinking through problems to find a solution the way that scientists do.

Sign up for a free Gizmos account to give simulations a try in your virtual lab.

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