

## **Making Science Simulations and Websites Easily Translatable and Available Worldwide: Challenges and Solutions**

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### **Abstract**

The PhET Interactive Simulations Project partnered with the Excellence Research Center of Science and Mathematics Education at King Saud University with the joint goal of making simulations useable worldwide. One of the main challenges of this partnership is to make PhET simulations and the website easily translatable into any language. The PhET project team overcame this challenge by creating the Translation Utility. This tool allows a person fluent in both English and another language to easily translate any of the PhET simulations and requires minimal computer expertise. In this paper we discuss the technical issues involved in this software solution, as well as the issues involved in obtaining accurate translations. We share our solutions to many of the unexpected problems we encountered that would apply generally to making on-line scientific course materials available in many different languages, including working with: languages written right-to-left, different character sets, and different conventions for expressing equations, variables, units and scientific notation.

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