

1116-E1-1081      **Robert A Beezer\*** ([beezer@ups.edu](mailto:beezer@ups.edu)), Department of Mathematics, #1043, University of Puget Sound, Tacoma, WA 98416-1043. *A WeBWorK-MathBook XML Bridge.*

We will describe the development and enhancement of two open source projects for teaching and learning mathematics through the integration of one within the other. WeBWorK is an established open source program for online, interactive, and automatically graded homework problems. MathBook XML is a new authoring language that allows a mathematics textbook to be rendered from a single source document into many different output formats. This project enables authors to easily create new WeBWorK problems within their MathBook XML source, making it possible for tighter integration of the problem content with the remainder of the text. It also allows authors to reuse existing WeBWorK problems (such as from the Open Problem Library) within their text.

For HTML output, the problems are interactive in the usual way, while for PDF output a static version of the problem is created.

We will demonstrate these new capabilities and discuss the design decisions and challenges that occurred in this project. The result could be used in textbooks designed for audiences at high schools, community colleges or undergraduate courses across the sciences, engineering and mathematics. (Received September 16, 2015)