Research Week 2019 Proposal

Title - Simplifying Mathematical Composition on Electronic Platforms

Program of Study - Mathematics and Computer Science

Presentation Type - PowerPoint

Mentor and Mentor Email - Dr. David Schweitzer (deschweitzer@liberty.edu)

Student name and email - Donald Honeycutt (drhoneycutt@liberty.edu)

Category - Applied

Abstract: Course materials, such as slideshows and course notes, are critical for aiding student learning in math and science classes. Unfortunately, most of the development tools for course resources require frequent breaks in workflow to insert mathematical notation. This presentation will explore the question of how these workflows can be improved, easing the development of educational resources in mathematical fields. While mathematical notation is supported fluently by LaTeX, support for the creation of certain materials (particularly slideshows) is lacking in simplicity. In addition, people who are not already familiar with LaTeX syntax will likely be intimidated by its steep learning curve. For these reasons, this research project focuses on extracting some of the simpler functionality from LaTeX and incorporating it into two main platforms: the Microsoft Office suite and web-based applications through browser extensions. For both platforms, the main result is a method for users to efficiently insert mathematical symbols into text fields. Workflow is now better maintained by automatically replacing LaTeX symbol codes in-line with the corresponding symbol, thus allowing the user to easily enter symbols without ever having to leave the keyboard. This functionality is implemented through the development of new browser add-ons and Microsoft Office macros. One future goal of this project will involve further modifying existing tools to allow users to insert more complex mathematical functions by rendering small segments of LaTeX code into images. Another potential extension of this research will

be to explore how resources developed using these methods can be made more accessible to those who may have visual impairments.