

Engaging Students with Interactive Figures

[Eric Schulz, Instructor at Walla Walla Community College and Pearson Author speaking:]

When teaching students how to graph a rational function, that's an example of a type of function that takes a lot of work to do algebraically and when you're all done you have one graph. You want to start changing things, you want to say, "Well what's the relationship between a root of a numerator and a root of the denominator and what if it changed a little bit." But if you've guided students through this process to create a static figure it's not so easy to change it and to answer those sorts of questions.

It ought to be alive, and it ought to have controls. There ought to be ways to engage with it and modify it and change it. When it became possible to write code that produces an engaging interactive 2d or three-dimensional figure. I kind of became obsessed with it and that it was continually rewarding to take these mathematical ideas and write some code and bring alive a powerful visualization that somebody else would find valuable.

A very unique characteristic of our precalc and calculus text is the figures that us mathematicians are so passionate about in our books. In these two books are actually not static, and what that means is when a student or a faculty member is in the book looking at material they'll read the narrative they'll run across an interactive figure. And the figure is just sitting there as a vehicle to teach them more mathematics.

There are scroll bars that you change. There are check boxes that you click on and as you interact the figure reveals the underlying mathematical concepts in a very visual way. It's almost like magic how some of the concepts are revealed and it just draws you in.

When a student first gets into it and they have that first aha moment, they're hooked. And they return to it and they want to see the visualizations and they want to learn from them. And it's critical for them to say, "Oh I see it. I get it. Is that all it is?" It's just fun.