Assignment 6: Making Mathematics Come Alive with Technology Reading

Discussion:

I learned about the shift between the way they used to teach soon-to-be educators in college versus the new way they prepare incoming teachers. I am one of those teachers, but I am beginning to realize that most of the things I am learning in my college classes, current teachers never learned in college. It is a good shift because technology is going to continue evolving, so we should figure out how to harness the benefits of it, just like any resource. The pedagogical principle of “teachers teach the way they have been taught” is pushing the idea of incorporating technology now, in college, so we can also incorporate it later, in the classrooms. Along with shifting mindsets, the article also talked about changing the traditional classroom to a more tech-empowered classroom. This involved teachers facilitating student learning while the student is a constructor of their own knowledge. The technology is able to be the sole “dispenser of knowledge,” allowing the teacher to inherit a more productive role.

The majority of the article talked about the four primary roles of technology in math education: concept and skill development, mathematical problem solving, mathematical reasoning, and mathematical communication. Narrowing it down to these four categories allows me, as a teacher, to use technology the way it is supposed to be used. For example, if I have a student who is more curious about a topic and I do not have the time, I can direct him towards a website online so that they can learn more about it. On the other hand, if I have a student who is behind and struggling with conceptualizing the idea, I can use technology to model the scenario in 3-D, “improving their spatial visualization capabilities.”

Response to Prompts:

In Calculus 3, Greg Wheeler showed a 3D visualization of an object almost every class. While learning them, the triple integrals were all just concepts to me, no matter how they were explained. But interacting with it and seeing the different components of the problem reflected in the model was very helpful for me. On the flip side, when I took AP Calculus, my teacher used hardly any technology, and when she infrequently did draw what was happening, I was rarely able to comprehend or make any connections. I think visualization/modeling technology would play a huge role if I teach calculus but also anything involving graphs or points.

I remember in a class, we made our own data set by measuring and recording experiments. The activity was very hands-on and engaging, but I do not remember any sort of math we were supposed to do with our data. I think there could be a way to start with something hands-on for a short amount of time, but then use technology to simulate 50 recurrences of the experiment. Then, for the majority of time, the students could be looking at the numbers and analyzing the data with a better understanding of where the data came from.

I find the modeling the most compelling - as most of my examples revolve around this idea. I think it is the best function that doesn't do the thinking or hard thinking for the student. It passively represents a problem visually and allows the student to construct the rest of their learning.

Questions and comments:

What ways can technology help a student who is struggling with mathematical vocabulary? How many school districts in Utah are being trained on technology in

mathematics and how many teachers integrate the ideas into teaching? How do you use technology effectively and efficiently but not let it take excessively or fraudulently?

AI statement:

I used Google Gemini to summarize the article into a slideshow. It was valuable because it showed the examples from the article visually and made simple tables of the constructivist shift in mathematics which gave me space to think of my own experiences while seeing the simple diagram.