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Play, Puzzle, Prove: Building Virtual Resources for Teaching Mathematics

Over the past two decades I've built games, puzzles, and visualizations to teach mathematical ideas that resist a purely symbolic treatment — resources meant to be played with, not just watched. The question I hear most often from colleagues is not "why," but "how": how do you actually build one of these? For years my honest answer involved more time than most instructors have to spare. In this talk I'll trace how that answer has changed. Drawing on examples spanning the full twenty years — some built the hard way, some built recently with the help of AI assistance — I'll show what has and hasn't changed in the process: the pedagogical judgment behind a good puzzle or a clarifying visualization is still entirely the instructor's, but the distance between having an idea and having something students can actually use has shrunk dramatically. I'll walk through several resources live, contrasting the old workflow with the new one, and close with practical guidance for colleagues who want to start building their own — no programming background required. My hope is that this talk leaves the room not just having seen some mathematics made playable, but with a genuine sense of how to make their own.