

Learning & Teaching

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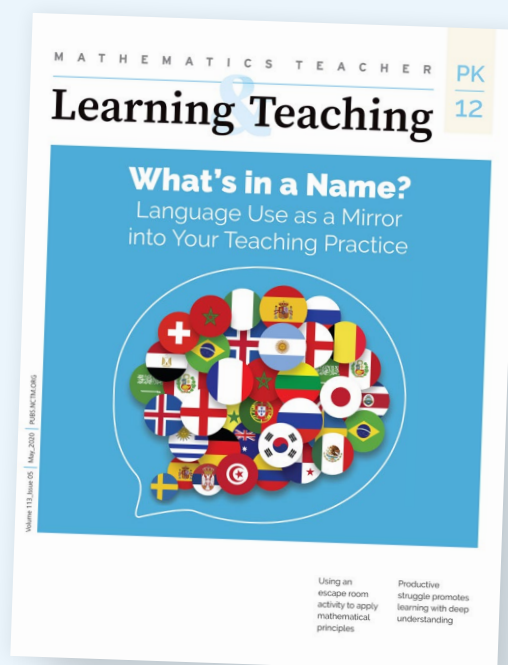
The National Council of Teachers of Mathematics advocates for high-quality mathematics teaching and learning for each and every student.

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CONTACT: mtlt@nctm.org



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Finance is Math

Ear to the Ground features voices from several corners of the mathematics education world.

Philip Dituri

“When will I use this in real life?” Every mathematics teacher has been asked that question. Experienced educators may have a collection of responses. However, the fact that students are asking this question in the first place is a failure of our approach to mathematics education.

As a high school teacher, students stopped asking *that* question when I incorporated relevant, real-world examples into my lessons. Unfortunately, finding sufficient examples for each topic can be challenging and tedious. However, there is a solution.

The National Council of Teachers of Mathematics (NCTM; 2018) argues that “students should be able to use mathematics to make wise decisions in their personal lives. . . to understand the effects of compound interest, weigh the risks of different investments, or determine whether payday loans are reasonable” (p. 18). Building on this, Marley-Payne et al. (2021) have shown that personal finance provides a robust foundation for standards-based mathematics coursework

that is relevant, engaging, effective, and grounded in real-world applications.

Mathematics is applied in many real-world contexts, with finance being a relevant and accessible example. Historically, many algebraic tools have been developed for finance, showing how the two are mutually reinforcing. Negative numbers were *invented* to model debt. High school algebra naturally informs our understanding of personal finance, as teaching the power of compound interest requires an understanding of exponential functions. For educators who embrace a concept-focused approach, mathematics and finance are inseparable.

This is different than just peppering students with unrealistic examples. For example,

Jasmin invests \$5,000 in two accounts, one at 6% interest and the other at 9% interest.

After one year, she earned \$400 interest. How much did she invest in each account?

While this is a question about money and interest rates, this is not a real-world problem. Jasmin should know how much she has invested in each account. A more realistic question might be, “What investment strategy will maximize her return? Justify your answer.”

Research also suggests that teaching financial education without integrating mathematics may be less effective (Marley-Payne et al., 2003). While financial education is correlated with increased engagement in financial activities, this increase is associated with positive actions—students are likely to open a savings account—and negative actions—students might take out a payday loan. When combined with mathematical skills, individuals show greater engagement in positive financial behaviors and reduced engagement in negative ones. It appears that financial education instills confidence, while mathematics equips students with the tools to make sound decisions.

Integrating personal finance and mathematics has multiple benefits. It makes mathematics

classes more relevant and engaging, leads to better financial decision making, and allows schools to include financial education in schedules without sacrificing other programs.

To support this integration, FiCycle developed the first-ever set of standards for personal finance and mathematics (see supplemental materials [link online]). These comprehensive standards provide a foundation for educators designing curricula or evaluating educational resources.

For teachers seeking classroom-ready resources, our “Calculate Your Future” modules offer a free, standards-aligned series for middle and high

school educators. These modules introduce foundational financial concepts using only basic mathematics.

For schools seeking a full course, FiCycle Math is free and offers a theoretically grounded introduction to personal finance, covering algebra and statistics standards. The course is student-centered, project-based, and teaches spreadsheets as a computational tool. In many schools, it serves as algebra II, while others use it as an elective.

NCTM (2024) outlines three core actions all educators need to take to meet current challenges facing mathematics educators. We have seen how financial

applications enable educators to implement all three by (1) delivering relevant content, (2) engaging students in an interest-driven pathway, and (3) revitalizing the student experience by engaging students in active sense making of the world around them using mathematics and statistics.

Teaching finance and mathematics together not only equips students with critical tools for their future but also prepares them to use those tools in the context they need. When we learn mathematics through this lens, students no longer need to ask, “When will we use this in life?” Instead, it becomes a good question for *teachers* to ask students. —

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Philip Dituri, @phildituri, is the director of education at the not-for-profit FiCycle and an educational consultant through his company, Dituri Consulting. For over a decade, he was a public-school teacher before earning his PhD in Mathematics Education from Columbia University and serving as a visiting professor at Fordham University. His current interests include collaborative learning, problem solving, games, and financial education.

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