



NOYCE NEWS



KNIGHT SPOTLIGHT

Over the summer, **Shane Wiggan**, **Laura Pimentel**, and **Yeidi Diaz Reyes** presented at the Noyce Summit in Washington, DC. With their presentation, *Three Paths to Mathematics Teacher Leadership*, the fellows shared their experiences and insights from the program to other educators and teacher leaders. The Noyce

Summit was a great opportunity for our fellows to learn more about the Noyce Teacher Scholarship program and network with other fellows around the country. Thank you to **OCPS** and **UCF** for funding that allowed our fellows to participate in such a rewarding experience.

Celebrating Success!

This summer all fourteen fellows successfully defended their dissertation proposals and entered doctoral candidacy. With IRB approval, fellows will begin to conduct their research next month. Congratulations, everyone!

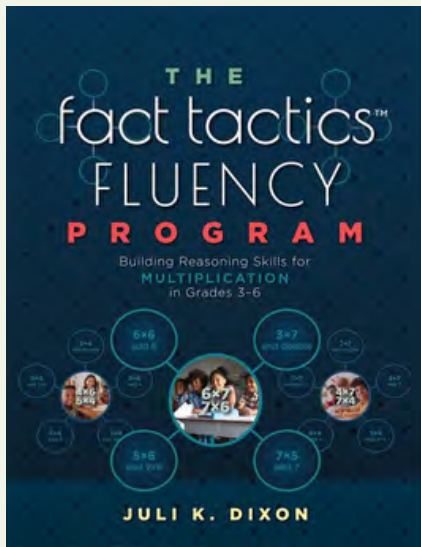
SUMMER SESSIONS

Fellows attended and presented at the Florida Council of Teachers of Mathematics conference in Orlando this summer. **Julia Keith** and **Kelly Penny** paired to present *Navigating Math Anxiety to Guide Students Back On Task*. **Abigail Ruiz** and **Diane DelliBovi** collaborated to present *Let's Talk Tasks: The Important Intersection of Contextual Relevance and Cognitive Demand*. **Nisha Phillip Malahoo** was the highlight of the weekend, with a standing-room-only presentation on *The Seven Wonders of Student-Centered Tasks*.



[HTTPS://CCIE.UCF.EDU/NOYCE-MATHEMATICS-EDUCATION/](https://ccie.ucf.edu/noyce-mathematics-education/)

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FUN WITH FACT TACTICS

Our partnership with OCPS continues to support students in building mathematics fluency with the rollout of a new program. Select schools will be piloting the *Fact Tactics Fluency Program* created by our own **Dr. Juli Dixon**. Fellows **Kayla Blankenship** and **Laura Pimentel** are helping to jumpstart this program with the OCPS Math Team. The first informational session for 3rd and 4th grade teachers will be on September 20th via Webex.

AFFIRMING LEARNING WALKS

Affirming Learning Walks are not your typical walk-throughs. Observations focus on eight productive teaching practices and teachers receive focused **positive feedback**. Last year, fellows led Affirming Learning Walks with their cohort members, professors, and school administrators. We are looking forward to another opportunity to share positive feedback with OCPS teachers when our next cycle of walks begins next month.



CITY YEAR LAUNCH

This month, **City Year** and our fellows launch the third year of collaboration with Eccleston Elementary, Catalina Elementary, Walker Middle, Memorial Middle, and Meadowbrook Middle.

A new and exciting highlight this year will be fellows personally mentoring corps members who have a passion for being teachers in the future.

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Mathematics is a Gateway

by Dr. Brian E. Moore, Department of Mathematics, UCF

“It’s like meeting Gandalf on a dark narrow bridge while he exclaims ‘You shall not pass!’” This is how one student described for me his experience with mathematics. It was his third attempt to pass a course, and he wanted so desperately to finish his degree. As my conversation with him continued, it became apparent that he was not even sure why his major required him to take the class. Like many students of mathematics, entering the classroom meant leaving the real world for an hour to dwell in a world of symbols and rules and problems that are completely separate from the world outside.

Unfortunately, the sentiment is common. Many students see mathematics as the opposition; it’s the only thing standing between them and a diploma, or between them and a happy life, or between them and lunch. Many students have difficulty aligning their major field of study, in addition to their interests and career goals, with the demands and topics of a math course that they are required to take. Many students see the abstraction of mathematics as a detraction from what is necessary and evident. Many students encounter mathematics as a gatekeeper, letting some progress at ease but making others pay severe tolls and holding everyone else back.

While the students wrestle with the gatekeeper, some teachers are working to make the subject a gateway, so that students have the opportunities and possibilities, which come with understanding, opened up to them. Much discussion and careful contemplation on what it means to transform mathematics from a gatekeeper to a gateway hinges upon “How?” How can we make mathematics more enjoyable for our students? How might our students be convinced that they can do mathematics? How does the institution need to change to support students of mathematics?

I would like to consider a twist on this usual theme, focusing instead on “What?” and “Where?” The sentence “*Mathematics is a gateway*,” begs the question: A gateway to what? And from what? Most snappy “gateway” slogans tell us where the gateway leads. Consider, for example, the following.

- “Education is the gateway to the American dream.” Wendy Kopp
- “Learning is the gateway to adventure.” Princess Beatrice of York
- “Fear is the gateway to the next step in my development.” Catherine Oxenberg

In each case, and in every other gateway quote that I have ever encountered, there is some explicit clarity on what lies beyond the gateway. In fact, that is the point of making the statement in the first place. Notice, each of these quotes illuminates the means by which something intangible or abstract may be attained. The sentence in question, however, equates mathematics with a

gateway and serves a different purpose by providing clarity on what mathematics is, or, more implicitly, what it is not (i.e. a gatekeeper).

But, are you not interested to know where this particular gateway leads? Simply saying “Mathematics is a gateway,” leaves the destination a complete mystery, which can be quite enticing and enjoyable. However, it can also be a bit scary, not knowing where you’re going, especially if the gateway itself is scary and difficult to navigate. Students, who are confronted with the gatekeeper, will generally not find the intrinsic motivation that is necessary to subject themselves to frustration and invest large amounts of time and energy learning a difficult subject, when there is seemingly no future benefit that is of interest to them. Perhaps more glimpses of what may be found on the side of the gateway that remains unseen to them can help.

The mathematics gateway asserts such a vast expanse of opportunity and possibility, that no one arrives on the other side at a single narrow resting-place. Even the inconceivably huge destinations of “adventure” and “the American dream” are too narrow. In fact, the gateway leads to many surprising new worlds. Worlds to be discovered, and worlds to be created. Delving into the mystery enriches our pursuit of the subject, and knowing where the gateway leads informs and motivates our points of departure. This column of the newsletter is dedicated to the destinations that motivate our passage through the gateway of mathematics. *Awareness of the variety and depth of the places that mathematics can take us is essential for us as teachers; it is a means by which we weaken the power of the gatekeeper for the individual student.*

The conversation I had with that student was good for me, because I got a glimpse of what he sees when he sheepishly enters the realms in which I live. I like to think that it was also good for him. By hearing his points of confusion and frustration, I was able to offer tailored bits of clarity and encouragement. I hope he left with new reasons to study the subject, because what lies beyond is relevant for his major and his career. I hope he received new evidence that he can, indeed, pass through the gateway, because math capability is not a gift, with which some are endowed and others are left without, but it is a skill to be developed. I also hope our next conversation affords the opportunity to leave him with new understanding about why the abstraction of mathematics is so useful—a gateway, if you will—for finding solutions to real problems in the world. Regardless, I look forward to more exploring of the gateway, discovering what else might be waiting on the other side, and sharing what I find with others.