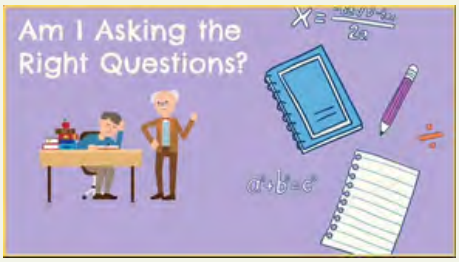
FEBRUARY 2024 VOLUME 5

NOYCE NEWS

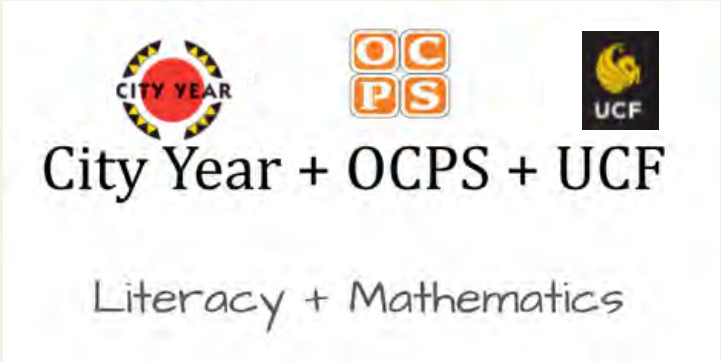
UCF - OCPS - CITY YEAR

The OCPS leadership team will once again visit fellow **Joslyn Vilabrera's** math class, not just to observe but to capture her innovative teaching strategies on video. This footage is slated for presentation at an upcoming professional development event, showcasing the impactful methods employed in our educational community.

Fellow **Diane DelliBovi** recently presented a Professional Development session at Lawton Chiles Elementary on effecting questioning to ensure student success.



COLLABORATION WITH CITY YEAR



Fellows **Julia Keith**, **Kelly Penny**, and **Yeidi Diaz Reyes** provided a professional development session entitled *Literacy + Mathematics*.

HTTPS://CCIE.UCF.EDU/NOYCE-MATHEMATICS-EDUCATION/

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Fellows **Julia Keith**, **Abi Ruiz**, and **Laura Pimentel** led mathematical discussions for local middle school students on mathematical reasoning and the points of view that lead to problem-solving. They enriched young scholars' minds and spread the joy and beauty in mathematics and mathematics thinking.

Fellow **Julia Keith** recently presented "Unlocking Visual Patterns with Scatterplots" with OCPS teacher Sabrina Robinson. Together, they explored the intricate world of scatterplots, aiming to enhance students' understanding of visual patterns and data analysis.

CONFERENCE HIGHLIGHTS

Fellows **Abi Ruiz** and **Diane DelliBovi** presented at the National Council of Teachers of Mathematics 2024 Regional Conference in Seattle this February. Their presentation, titled "Let's Talk Tasks: The Important Intersection of Contextual Relevance and Cognitive Demand," attracted approximately 70 participants.

Upcoming Presentations

Fellow	Conference Name and Date
Nisha Phillip Malahoo	AACTE, Denver, February 2024
Kayla Blankenship	NCTM Virtual, April 2024
Nisha Phillip Malahoo	ICRSME Virtual, April 2024

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Gateway to Truth

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

It could have been a scene filmed before a live studio audience in the 1960's. The stage is set as a kitchen where a husband and wife separately enter and exit, missing each other every time. The bananas on the counter are getting brown. So, he eats all of them. Seeing that the bananas are gone, she decides to buy more, doubling the amount she bought last week. He continues to eat the bananas, but when they start getting brown, he doubles his efforts. Surprised the bananas are gone, she buys more, much more. Finally, after several weeks of this, they find themselves in the kitchen together, standing next to thirty bananas. He says, "You gotta stop buying so many bananas. I'm eating four or five a day, and I can't go on like this!" To which she replies, "Stop eating them! I'm trying to make banana bread!"

I suppose it's another true story about how I was wrong. (Maybe you're starting to recognize a pattern in my life.) I kept telling myself, "The bananas are for us to eat, and I shouldn't let them go to waste." Apparently, one needs brown bananas to make banana bread. I had no idea. The story has become an icon in our marriage. If either of us is acting on pieces of information without asking questions to get the whole story or is accepting as true something that we only made up in our minds, then we should expect to hear the other say, "Stop eating all the bananas!"

Research by Robert A. Burton provides some insight. In his book, *On Being Certain: Believing You Are Right Even When You're Not (2008)*, he explains that the information we get is often fragmented, and we naturally put the pieces together to form a coherent story. Of the fragments of information we have, any given piece falls somewhere on the scale from verifiable truth to believable hear-say. Then, there are many pieces of information we do not have at all, but our brains reward us with dopamine when we fill in the gaps that are missing. These gaps are generally not filled in with truth or evidence, but rather stories that we make up. Granted, the stories have some backing, as they are, in some way, based on past experience. Thus, they are believable enough to become part of our truth. In the end, distinguishing the truth from what we simply believe or even made up is difficult and often leads to lies that we tell with honesty.

Inevitably, this phenomenon happens in each of us on a daily basis. No one is immune. You hear a snort from the back of the room after you ask a question, and you tell yourself "He thinks that's a stupid question," but really he was looking at memes and did not even hear your question. You notice a grimace from your coworker at a team meeting, and you think "She is not happy with these decisions," but, in fact, her lunch just did not sit well. You hear some stern and short words, and you assume the person is angry, but they are really just in a hurry. You see a car speed by at Mach 3 weaving in and out of traffic, and you shake your head saying, "Teenagers," but it's actually an adult. We generally assume they are putting lives in danger for no reason, but maybe they are working to save lives; maybe they need to get someone to the hospital. How can we really know?

These conglomerate stories, consisting of seemingly indeterminate quantities of truth and confabulation, find their way into every aspect of life. They are in our homes, neighborhoods, businesses, politics, and public interpretations on science. Even trusted and trustworthy sources can, and do, spread lies honestly, which in turn leads to people calling facts those things which are only ideas. Evidently, the list of scientists who have argued the case for a scientific idea with conviction and have later been found to be wrong is not only lengthy, but it contains some of the most important and influential scientists ever known, including Isaac Newton and Albert Einstein. Now, be careful not to 'read between the lines' and infer something that I did not write. The point is that establishing truths on any topic which is open for debate is profoundly more difficult than one generally assumes.

Doing mathematics properly is different. Regardless of the level of mathematics you are pursuing, whether you are a mathematician solving problems that no one else has ever solved or a third grader

learning to divide, the act of doing mathematics builds truth from what you already know to be true. Regardless of the mathematical topic we are considering, everyone arrives on the scene somewhere between full understanding and no understanding, and the gaps in understanding are only filled with agreed upon proof. Reaching that point requires asking questions, such as “What more do I need to learn and understand about the situation? What do I know objectively? What assumptions am I making? What additional information do I need? What questions or clarifications might help?” These are the types of questions mathematicians ask as they delve into the mathematical unknown; they are the means by which proof is developed, as well as the prelude to creativity in mathematics.

Outside the realm of mathematics, proof can only ever be beyond reasonable doubt, and we must be willing to allow our ‘truths’ to be continually refined by the questions that help us get closer to more complete truths. Each of the questions in the previous paragraph is from Brené Brown’s book *Dare to Lead* (2018, page 263). With the aim of helping people connect and understand each other, she poses those questions to provide a practical means for filling in the gaps of a story with truth. I know now, the simple act of asking those questions would not only have provided a banana-bread-refuge, safe from the banana-brown-gauntlet I was enduring, but it would also have helped me see a bit more of my wife’s true heart and mind.

Good teachers of mathematics nurture their students to ask questions like the ones that mathematicians ask. The Noyce Fellows are some of those teachers. More than that, their dissertations are the results of asking the questions that help fill the gaps in our knowledge with truth, rather than the stories we make up, making them teacher leaders that are worthy of followers.