



*Speaker 1* - **00:04**

Hey, everyone, this is Katie Novak, and you're listening to the Education Table, a micro podcast where I answer your questions about inclusive education in 10 minutes or less. In today's episode, we're diving into how universal design for learning plays a super important role in creating equitable math education for all students in K to 5, no matter the curriculum that you're using. So let's dive in. In Greek mythology, Echo was a nymph who loved to talk a lot like me. But she angered Hera, who's the queen of the gods, with endless talking and chatter. And as a punishment, Hera cursed Echo to only repeat the words spoken to her, basically preventing her from expressing her own thoughts. And so this curse confined Echo to just repeating what other people said, trapping her in this loop that she didn't have anything new to contribute.



*Speaker 1* - **01:08**

And the reason I started with this story is because there are many math classrooms that are structured in a way, especially traditionally, that echo this myth. And that pun was totally intended and awesome. In math classes, students are often asked to repeat back what they have been shown without the opportunity to think independently or to think creatively. And to break this curse, we need to prioritize inquiry, we need to elevate diversity perspectives, and we need deeper engagement in math learning. So how are we going to do that? Let's dive into the research and then we're going to highlight some concrete strategies you can put into practice right away. Many of you may have heard of the Algebra Project, which truly exemplifies the impact of inquiry based and culturally responsive mathematics education.



*Speaker 1* - **02:02**

Founded by mathematics educator Bob Moses, the project aimed to make algebra accessible to all students, especially those students who had been traditionally excluded from rigorous mathematics instruction. The Algebra Project really shifted the focus from rote memorization to problem solving and collective learning. This research, which is an incredible foundation that helps us to recognize that all students can learn at high levels when we get the conditions right. This inspired me to consider what this might look like in elementary mathematics long before students begin formal algebra. And this inquiry led me to collaborate with Ashley Marlowe on a book about elementary mathematics instruction using universal design for learning as a lens. By emphasizing student centered learning, real world, authentic problem solving, and collective inquiry, we can significantly improve both understanding and performance in mathematics.



*Speaker 1* - **03:00**

This approach not only ensures access to rigorous learning, but fosters a sense of belonging and confidence and competence in students. So no one's going around saying, oh, but I'm not a math person. So throughout our collaboration, I learned so many strategies to make mathematics accessible, engaging and Relevant. And I would love to give you a preview of some of those strategies. So let's dive into those. So the first strategy is to build clarity around learning goals. It is absolutely essential for students to understand why they are learning. For example, if you are teaching fractions, connect the goal to a real world context like sharing pizza or measuring ingredients. So when you're stating the learning objective, it's not only about fractions. You might say, today we're going to learn how to compare fractions.



*Speaker 1* - **03:55**

So the next time you go rolling into a birthday party, you can decide which pizza slices are biggest at that pizza party. And this clarity help students to see the relevance and the purpose of learning while making connections to grade level standards. Now the second strategy is to provide options and choices that are construct relevant. Now, choice is not only about allowing students to pick their activities and just do whatever they want. It's about creating really flexible pathways as students work towards firm goals. So when teaching multiplication, for example, you might offer lots of options like using repeated addition, drawing an array, or creating a story problem. And these choices allow students to really explore different pathways and then choose the methods that resonate with them. And that helps to not only increase engagement, but deepen understanding.



*Speaker 1* - **04:48**

And when students begin to share the pathways that they took with each other, it helps to build math discourse and perspective and just empathy of basic problem solving. Now the third strategy that we want to have in all elementary mathematics classrooms is to incorporate visual and concrete representations. In udl, we talk about incorporating multiple means of representation. And that is so important in elementary mathematics. So when teaching abstract concepts like division or decimals, you can use tools like fraction bars, base 10 blocks, and number lines. These visual representations, whether they're models or graphs, can help students really visualize and grasp relationships between numbers. So if you're using a 10 by 10 grid to show that 0.35 equals 35 shaded squares out of 100, it makes the abstract concept so much more tangible and so much more accessible.



*Speaker 1* - **05:43**

Now, the last strategy is to provide numerous ongoing opportunities for self reflection and peer feedback. At the end of every lesson. We want to give students time to reflect on their learning and we can ask them questions like which strategy worked best for me today? Or what do I still find challenging? And give them multiple ways to share those reflections. Reflections, whether it is writing or recording audio or making a video. And once they're able to reflect and think about what they're great at already and what they want to continue to work on, encourage them to share these reflections with peers. Encourage them to send them home to increase family and community engagement and then use them when you're conferencing with students to help them build self awareness.



*Speaker 1* - **06:36**

So in this episode we talked about some really great concrete strategies to make mathematics instruction in the elementary classroom more accessible to all learners. Thank you so much for joining me at the education table. UDL in mathematics is not just about offering choices, it's about designing experiences that truly value and connect with and uplift every single learner. And by being clear about goals and offering meaningful choices and incorporating multiple means of representation and reflection, we can create more inclusive and equitable classrooms that help every student become, and I quote, a math person. So please please check out Universal Design for Learning in mathematics instruction K to 5, my latest project with Ashley Marlowe and it is available everywhere now. Be sure to explore all the resources and the book club guide in the show notes if you want to know more about it.



*Speaker 1* - **07:30**

Until next time onward.