

IMPLEMENTING UKITS IN THE CLASSROOM: A PATHWAY TO THE FUTURE

Q&A WITH 6TH GRADE SCIENCE TEACHER MITCHELL MANDELL



MAKING STEM REAL

Mitchell Mandell is fired up about science. The 6th grade science teacher at Greenfield Middle School in El Cajon, Calif., about 20 miles outside San Diego, exudes passion for teaching his students the fundamentals of science and inspiring them to explore the world around them. For many at Greenfield, a Title 1 school with a largely immigrant or first-generation student population, it's the first time the kids have ever had an opportunity to go hands-on with building and coding their own robot. UBTECH Education spoke to Mr. Mandell to find out how he's introducing robotics into his classroom, what is inspiring his students, and what his plans are to take the program to the next level.

Please tell us about your classroom and the experience of your kids leading up to introducing a robotics curriculum?

Our school, while Title 1, happens to be fortunate in that the administration and parents tend to be very tech-forward and open to new ideas in the classroom. We've actually tried several other robotics curricula but rejected them for various reasons, due mostly to the fact that curriculum providers have struggled to meet the specific needs of middle school kids. We knew we needed a solution that is age-appropriate for kids who are learning how to control and tune their fine motor skills, while inspiring without overwhelming them with STEM concepts. At the same time, it also needs to be NGSS-aligned. That's where UBTECH came in with the Early Innovator grant program and UKITs.

Why do you think STEM is important?

STEM is teaching for the future. We can't compartmentalize subjects like we have historically. We are no longer preparing students for a predictable market – it's quite the opposite. We need to teach skills that translate to any pathway the future might have for students and the ability to problem solve is paramount in every aspect of STEM.

How do UBTECH's UKITs support your STEM initiatives?

UKITs are a beautiful example of the marrying of science, technology, engineering and math. The hands-on aspects of these kits allows students to integrate their knowledge across all STEM fields and see the relevance of what they learn when creating something that can actually have a real-world impact.

How are you using UKITs in your classroom?

In my 6th grade science classroom, we're covering a unit on weather and climate. Alongside some already existing material, students are working on a unit titled "A Robot For All Weather," in which they're building and testing prototype windshield wipers.

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What are the student's reactions to working with robotics?

It's so exciting to know I'm rotating through my five science classes with these kits and students often ask, "When are we doing robotics again?" Part of the reason I got into teaching was to make science and education fun. It doesn't have to be

archaic the way many of us learned. Robotics provides that foundation for academic rigor that is FUN.

What features of the program do you use and why?

I use UBTECH's curriculum, which can be dense – that is both a complement and a challenge.

There is a lot to explain, and I think UBTECH did a good job at doing so. I

especially like the slides (and the kids love them) giving more context and history for why we're looking at a particular machine or building a certain robot. We then use Chromebooks installed with the UBTECH app to go hands-on building robots from the unit. The kids are excited by learning about patents and the idea that something they create could be patented one day, too!

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WHAT'S NEXT

What's next for your UKITs and STEM program?

I plan to collaborate more with other middle school teachers using the UKITs and find out how they're doing unique and interesting things in their classrooms. I might be able to borrow some of their ideas! Beyond that, finding ways to apply UKITs and STEM skills to other fields will be fun for both me and the kids – the sky is the limit.



Mitchell Mandell is a 6th grade science teacher at Greenfield Middle School in El Cajon, CA. He is in his third year teaching at Greenfield Middle School.

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