



littleBits™ **education**

REAL-WORLD PROBLEM SOLVING IN MATH CLASS

HOBOKEN CHARTER SCHOOL USES LITTLEBITS TO ENCOURAGE MIDDLE SCHOOLERS TO ENGAGE
IN HANDS-ON LEARNING IN MATH CLASS

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Students at the Hoboken Charter School, in Hoboken, New Jersey, pride themselves on being true members of the Hoboken community. Their teachers are known for encouraging them to identify community problems; design, implement, and evaluate action plans; and engage in ongoing personal reflection.

Through these experiences, the students become active, contributing members of the school community, the city of Hoboken, and beyond. It's easy to see this in action in more civic-minded classes like history or literature; but, how are students taking a hands-on approach to math?

Getting Hands-On with STEM

Christopher Kunkel is a Middle School Math Teacher and K-12 STEM Coordinator at Hoboken Charter School. Having facilitated an after school Girls Who Code program, he has long understood the power of STEM in the lives of his students. It's a powerful way to show them how a traditionally “dry” topic like mathematics can be applicable in the real world.



Five years ago, Christopher came across the littleBits booth at New York Maker Faire; he picked up a few kits to incorporate into the after school program and his students immediately took to them. Beyond his work with Girls Who Code, Christopher immediately saw how littleBits could impact his math classes.

Christopher purchased a littleBits Workshop Set Kit and he began integrating lessons here and there in his middle school classes. But it wasn't until he procured a Code Kit that he really hit his stride in the classroom, as well as out.



littleBits Takes Kids Beyond Traditional Classroom Learning

Traditional classrooms can be stifling for some students -- especially those who haven't found a lot of success in book learning. Using littleBits in his math classes, Christopher wanted to show his students how STEM could be applied in the real world. He wanted them to get hands-on.



“I wanted to take a subject area that is often considered unappealing to many students and to make it more real for them. Math is fun, dynamic, and extremely useful in solving many real-world problems. littleBits is one way to bring that to life for them.”

Christopher Kunkel, *Middle School Math Teacher, STEM Coordinator*

Students who are resistant to math respond well to hands-on work with littleBits. The Bits encourage problem-solving; they encourage students to tinker -- to try and to fail. Failure becomes part of the learning process.

The Evolution of littleBits in Math Class

With less than 300 students, Hoboken Charter School is smaller than most. There is only one class per grade level, which makes it more attainable for educators to provide many pathways for students to explore -- and find -- topics that they are truly interested in.

“I was excited to integrate littleBits into math classes as another way to encourage students to pursue their passions. By giving them a solid STEM foundation, I know that I’m making it easier for them to make informed choices about what they want for their future.”

Christopher Kunkel, *Middle School Math Teacher, STEM Coordinator*

Christopher’s use of littleBits has evolved over time. At first, he incorporated Bits into after school programs, then elective classes. As he became more familiar with littleBits, he progressed from a “let’s play” mentality to actually using littleBits as a prototyping tool.

Whereas some elementary school students that he works with as part of his role as a STEM Coordinator simply tinker with littleBits, Christopher notices that his middle schoolers are more purpose-driven. They are motivated to produce something that does something specific. They tend to “think more logically through problem-solving and the engineering design process.”

Students who struggle do so because they give up too easily. littleBits encourages them to try again and again. Hands-on stuff makes them realize there is no “right” answer. Makes failure okay, helps students stick with it.

