

Education

Educators want to pair math and music in integrated teaching method



Jazz composer Herbie Hancock addresses a group at the U.S. Department of Education on April 26, 2016, where he spoke about using music to teach math and engineering. (Paul Wood/U.S. Department of Education)

By **Moriah Balingit** April 26

As a child, before he started playing jazz, composer and musical icon Herbie Hancock was fond of taking things apart and putting them back together. He was perpetually inquisitive and analytical, a quality that

carried from his days of tinkering with clocks and watches to his playing of music, where he threw himself into jazz as a teen.

“I would always try to figure out how things work,” Hancock said. “It was that same instinct that I have that made me learn jazz more quickly. . . . It wasn’t a talent for music. It was a talent for being able to analyze things and figure out the details.”

Hancock later studied electrical engineering at Grinnell College before starting his jazz career full-time. He says there is an intrinsic link between playing music and building things, one that he thinks should be exploited in classrooms across the country, where there has been a renewed emphasis on science, technology, engineering and math (STEM) education.

Hancock joined a group of educators and researchers Tuesday at the U.S. Education Department’s headquarters to discuss how music can be better integrated into lessons on math, engineering and even computer science, ahead of International Jazz Day this weekend.

Education Secretary John B. King Jr. said that an emphasis on math and reading — along with standardized testing — has had the unfortunate side effect of squeezing arts education out of the nation’s classrooms, a trend he thinks is misguided.

“English and math are necessary but not sufficient for students’ long-term success,” King said, noting that

under the Every Student Succeeds Act, the new federal education law, schools have new flexibility to use federal funding for arts education.

Hancock is the chairman of the [Thelonious Monk Institute of Jazz](#), which has developed [MathScienceMusic.org](#), a website that offers teachers resources and apps to use music as a vehicle to teach other academic lessons.

One app, Groove Pizza, allows users to draw lines and shapes onto a circle. The circle then rotates and each shape and line generates its own distinct sound. It's a discreet way for children to learn about rhythm and proportions. With enough shapes and lines, children can create elaborate beats on the app, all in the context of a "pizza" — another way to make learning math and music palatable to kids.

Another app — Scratch Jazz — allows children to use the basic coding platform Scratch to create their own music.

"A lot of what we focus on is lowering the barriers to creative expression," said Alex Ruthmann, a professor of music education at New York University who helped develop the [Groove Pizza app](#).

Other researchers discussed their experiments with music and rhythm to teach fractions and proportionality, a challenging concept for young students to grasp when it is taught in the abstract. Susan Courey, a professor of special education at San

Francisco State University, developed a fractions lesson that has students tap out a beat.

“It goes across language barriers, cultures and achievement barriers and offers the opportunity to engage a very diverse set of students,” Courey said. In a small study, students who received the music lesson scored 50 percent higher on a fraction test than those who learned with the standard curriculum. “They should be taught together.”

“If a student can clap about a beat based on a time signature, well aren’t they adding and subtracting fractions based on music notation?” Courey said. “We have to think differently.”

Hancock thinks that the arts may offer a better vehicle to teach math and science to some students. But he also sees value in touching students’ hearts through music — teaching them empathy, creative expression and the value of working together and keeping an open mind.

“Learning about and adopting the ethics inherent in jazz can make positive changes in our world, a world that now more than ever needs more creativity and innovation and less anger and hostility to help solve the challenges that we have to help deal with every single day,” Hancock said.