
National Blue Ribbon Schools Program

EXCELLENCE IN EDUCATION SINCE 1982

The Cranbury School
Cranbury Public Schools
Cranbury, New Jersey

Transcript: The Math Shuffle

Narrator: The Cranbury School is a preK-8 school with a special approach to math instruction. They call it the Math Shuffle. Susan Genco is chief school administrator and principal.

Susan Genco, Chief School Administrator and Principal: About twelve years ago, we started differentiating math instruction with real precision. Elementary teachers work alongside middle school teachers to provide instruction to students in small groups. The Math Shuffle was the brainchild of Mrs. Linda Penney, former curriculum supervisor and current Board of Education member.

Linda Penney, Board of Education Member and Former Curriculum Supervisor: Part of my role was to examine, and make recommendations for the elementary mathematics program. My findings led to the following recommendations: the creation of a more fluid math program, enrichment rather than acceleration, and the pilot program in grade two.

Susan Genco: The most important hallmark of this program is the teacher leadership and collaboration that takes place. Teachers come together; they look at student data, they look at how students learn, their strengths and areas for growth and then they differentiate instruction accordingly.

Narrator: Erin Peacock supervises curriculum and instruction at Cranbury.

Erin Peacock, Curriculum and Instruction Supervisor: The math shuffle is unique in that students are grouped concept by concept. They all end up with a basic level of proficiency, what's required by the New Jersey Student Learning Standards and the PARCC Performance Level descriptors, but some are able to move and extend beyond and some require support in getting to that basic level of proficiency.

Narrator: Teachers begin by developing pretests for each unit. Michele Waldron, Assistant Principal, explains.

Michele Waldron, Assistant Principal: The pretest is aligned in rigor as well as objectives to the upcoming unit of study to determine the prior knowledge and content expertise of the students ahead of time. We look first at the children who have demonstrated mastery or prior knowledge of the content that they're about to be taught. And then those students would be placed in what we call an enrichment group. The rest of the students would then be heterogeneously grouped, meaning mixed up in ability levels and background knowledge, and they would be placed then in smaller learning groups because we have that extra teacher that's pushing in to the grade level.

Michele Waldron: Finally, the last step is really for the PLC to come together and develop a common post assessment. And then we of course analyze that data as well to determine if there are any trends that might impact our instruction moving forward in that content.

Narrator: The proof is in the results. Seventy-five percent of 7th and 8th grade students take Algebra I or Geometry—high school level courses. Two current middle school students look back.

Grade 7 Student: The Math Shuffle helped me do more difficult math earlier on, which was good, because it let me progress further than I would have otherwise.

Grade 8 Student: The math shuffle has helped me experience different teaching styles from different teachers as well as find out which learning styles worked best for me. I think that the shuffle helped me see a different side to math, and I think it made me like it a little bit more and become one of my favorite subjects.

Narrator: Emily Vorp, a Cranbury middle school math teacher who pushes into the fourth-grade Math Shuffle, runs an afterschool math enrichment program for fourth and fifth graders.

Emily Vorp, Middle School Math Teacher: All the activities are very closely aligned to the curriculum that we have here at Cranbury School, and what's great about the Crazy Eights program is that it's a heterogenous group, so that each one of the students is really exploring math at their own pace and at their own level.

Emily Vorp: So let's build one more layer. Wow, awesome! Alright. So the cubed numbers are... one, then. eight, then 64...and we can keep going. How many cubed numbers do you think there are all together? Infinite. Infinite number. Yup. I can't take the suspense any longer. How about you guys? Let's kill those lights. Whoa!

Narrator: It's customary, although not required, that every fourth grader plays an instrument in the band. Cesar Rainho is a band director at Cranbury

Cesar Rainho: What we do is that everyone is set up with a common language in rhythm, and the way rhythm and math equates is that rhythms are very much like fractions, and students come in here and they are subdividing rhythms and subdividing fractions without even knowing it.

Narrator: Students have many opportunities to apply math. Susan Lepardo is Cranbury's enrichment teacher and manages the school's aquaponic system.

Susan Lepardo: This is a third-grade class, and we're studying worms and their benefit to our system. And today, they're measuring the worms, they're weighing the worms, and they are going to decide if the worms prefer to be in sunlight or in darkness. The students grow the plants from seed; they plant them; put them into the medium in our grow cups; they track the growth of the plants; they track the weight of the fish; they monitor the water's Ph level and nitrite level; they harvest the fruit when it is ready; and basically they problem solve.

Narrator: Tom Stinson teaches Industrial Arts and Engineering to students from Kindergarten through eighth grade.

Tom Stinson, Industrial Arts and Engineering Teacher: I use things like math more as a tool to solve a problem or to help us get information so that we can solve problems. Each year my students they get

more and more difficult projects and things to do. By the time they are in 6th grade, like this class here, they're using mechanical drawing skills to actually draw and design their projects. And then my eighth grade program sort of is a culmination of all of the things that they learned over the years. They are building robots. We're doing a sea perch robot, which is an underwater type of robot. They're soldering the components together, then they go outside and we have a test tank outside where they can actually test their robots.

Erin Peacock: So the vision is high quality math instruction in every classroom that allows every student to experience the richness of the discipline of math, both the content and the practices. It allows students to experience productive struggle and to collaborate with others as real mathematicians do. It is an environment that is extremely responsive to student thinking.