

On Teaching and Education: Jason Kamras, 2005 National Teacher of the Year

Video transcript, from an interview by Milton Chen

Watch part one of On Teaching and Education: Jason Kamras at

<http://www.edutopia.org/1528> and part two at <http://www.edutopia.org/1529>

PART ONE

Jason Kamras: I teach seventh- and eighth-grade math at John Phillips Sousa Middle School, in Washington, DC, and this year I'm serving as the National Teacher of the Year. In that capacity I travel all over the country, speaking on behalf of children and education, and in the past eight months I've been to about thirty-five states and I've visited tens, if not hundreds, of schools and different groups over the course of that time.

Sousa is a middle school; we have about 400 students in each of the grades that I teach. It's usually between 125 and 150 students. Most of the students — about 90 percent plus — are on free or reduced lunch, so many of the students face a lot of economic challenges in their lives. But if you came into my classroom, what I hope you would see is that we are all about business, but also at the same time having a lot of fun while we do that.

How to Make Math Engaging and Exciting

I love photography; it's something that's been a passion of mine for quite some time, and so I've incorporated it into my mathematics instruction. Let me give you an example: On a point-and-shoot camera, when you have that wide-angle button, the tight and the wide, really, all you're doing is changing the angle of view. That's a great way to introduce angles and geometry to students. Shutter speeds on a camera — it's just fractional comparison.

We do everything digitally, so when you use programs like Photoshop, resolution is really just ratios, pixels per inch or per centimeter. What I've found is, if you can get kids excited about something such as photography, and then you can sneak the mathematics in at the same time, you really make it very engaging and exciting to them.

I try, particularly in our statistics unit, using real data about their neighborhood or the city of Washington, DC. One of my favorite things to do is look at educational-attainment rates and how that correlates with income. And it's something which is very powerful for students to see, particularly in the middle school grades, when they're beginning to gain an awareness of income, and how much things cost, and if you can show them that very close relationship between staying in school and your likelihood to earn a certain amount of income, it's very powerful.

When we study coordinate geometry, which is at the foundation of all algebra — basic linear functions, plotting points on a coordinate plane — we use the grid of Washington, DC, which is something our students are very familiar with. For example, the y axis on a coordinate plane would be formed by North Capitol and South Capitol streets. The x axis would be formed by East Capitol Street and the National Mall, and, at the origin, the intersection of the two axes, is the U.S. Capitol Building.

Then we're able to use that grid as our basis for our study of coordinate geometry, and then do projects based on that, using the streets of their own neighborhoods, and finding the two-dimensional slope on a map, given their neighborhood of various streets, and it's a very real example of slope and coordinate geometry, which is very relevant to their lives.

Moving Beyond Textbooks

I've never found a single textbook to offer everything that my students need. One of the difficulties is that, typically, textbook material isn't particularly relevant to a particular student's life. And so I try to bring in these other examples to make it more relevant to their lives. But at the same time, I like to do a lot of projects — I like to do a lot of, um, kinesthetic activities, a lot of tactile activities, which textbooks don't typically offer.

You can have students stand up and essentially you're doing calisthenics, but they're all math oriented. For example, have students raise up their arms in a right angle, in a 45-degree angle. Show me 180 degrees, show me 10 degrees. It's a lot of fun — it gets students out of their chairs, and they're physically doing these representations of mathematics, and I've found that they remember these things much, much more when you do something like that.

Using Technology in the Classroom

I was able to write some grants and acquire an LCD projector, and I use my laptop Apple computer in classes. The combination of those two things is very powerful in class, I've found. It enables me to really increase the visual component of my instruction. So, for example, I can do geometric manipulations, which would be very difficult to do on a chalkboard, or even a white board — very powerfully using computers — but also simpler things. I'm able to get onto the Web and pull up examples, real examples, to illustrate concepts in mathematics.

I've recently received a smart board, an interactive whiteboard, which is also another opportunity to increase the visual component of instruction. Also, an assessment tool, a digital-assessment tool. Basically, I'm not sure if people are familiar with this, but it's essentially a class set of remote controls that allow students to input responses to questions; the data is received infrared and then instantly tabulated by my computer.

What that allows me to do is to check for understanding in the middle of a lesson. So, if I'm not sure if they're quite getting the concept, I can pose a question and instantly see a bar graph on my computer of how many students understand the material. And, really, that's the point of assessment: to drive instruction.

What Is a Smart Board?

It is a white board, like a dry-erase board, which hooks up to your computer and an LCD projector; the white board essentially becomes the computer screen. And, using your hand as a mouse, you can open up applications right there on the whiteboard for the whole class to see. But not only that, you can do mathematical exercises on the whiteboard, and then all that writing can be captured by the computer and printed out as notes for your classroom.

It has a lot of great software that goes with it that allows you to bring in multimedia, which, again, can be displayed on the whiteboard, and [it has] a lot of wonderful tools. The software allows you to, for example, display a virtual compass that you can manipulate and measure angles right there on this whiteboard without actually having the physical item. It really offers a lot of wonderful opportunities to do a lot of amazing visual teaching, which I think is so important for mathematics.

Assessing Student Progress

I'm one who likes the accountability movement, and I actually look forward to seeing how my students do at the end of the year with their tests. I think, in a way, that part of the essence of our jobs is to show some quantifiable achievement by our students. But I think it's also important to be assessing along the course, throughout the year, to be making sure that your students are making progress, and to do all sorts of different kinds of assessments — not just the typical paper-pencil [kind], but project-based assessment, performance-based assessment, having students demonstrate their knowledge in real situations, being able to explain and justify their work to you and to their peers.

The test scores at my school have for many years been quite low, quite honestly. In fact, for a number of years, about 80 percent or more of the students were leaving the eighth grade with below-grade-level skills, which is a truly appalling, as I see it. And we instituted some curricular changes, [using] some of the technology that I talked about, as well as doubling the amount of instructional time for mathematics, and some other changes that were made. And in the first year of those changes, we cut that 80 percent of [students with] below-grade-level skills down to 40 percent, based on our state test. We're now working to cut that 40 down to 0, and I really do believe that we will be able to do that.

Those were the math numbers. The reading numbers also improved. And I don't know the specific data on the reading offhand, but I know that it did have a significant amount of gains, and I think one of the reasons is because when students feel confident in one subject area, that often carries over into another subject area. And also, because good math teaching involves good reading teaching at the same time.

Professional Development and Sharing Ideas

Professional development and sharing of ideas is so very important, and we really do try to do that in my school. In the past couple years, I've been able to be the grade-level chair of my team, and we've been able to construct a schedule in which every day, we have a full period when the team can get together and share ideas not only in terms of academics but also in terms of meeting students' social needs and disciplinary needs, setting up meetings with families to make sure that we maintain that contact, and so it's a really wonderful aspect of our program, and I am quite certain we would not have had the success we've had without that opportunity to collaborate every single day.

#