



NCTI 2009 Innovators Conference

Podcast Interview

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Transcript

Thank you very much. I'm delighted to be here.

STEM is science, technology, engineering, and math. And in fact, my own children say how lucky I am that there's finally an acronym to describe what I've been talking about for 35 years. I'm a 30 year teacher in science and mathematics, k-12, predominantly middle and high school; a principal- middle school and high school as well. It didn't take me very long in teaching to understand that the engagement with youngsters was the most important part. That regardless of what it was we were teaching, if we didn't reach them on their own level and construct understanding from where they were, that we were just flying right over them; and it became just an exercise for adults, not for youngsters. So in my own teaching, in my own life, I think that's the most important. So it has finally taken our country a very long time to understand this, especially in public education – that it matters how we engage our youngsters, not always what we engage them with. Therefore, how we look at their world and the world that they live in on a daily basis is vital.

They describe themselves as digital natives, which is an implication and a finger pointed at me to call me a Luddite, actually, but be that as that may, they are digital natives. They have learned to multitask. They understand that their world is part of an electronic world. It's full of relationships with people who are global; therefore, public education needs to follow suit in a real way. Not because we put them on a computer, but because technology plays a role in science, technology, engineering, and math education, so that the T and the E in STEM start to inform the S and the M, the science and mathematics. I learned this early on in my teaching when 20 years ago I brought GIS to my classroom and found that manipulation of that kind of information not only helped them to understand bacterial growth and tree growth but it also helped them to understand what exponential mathematics was like. That's where we are right now, in thinking about STEM in an integrated way, in a transdisciplinary way. So it's important nationally to take a look at who all is understanding this and leading the charge. And fortunately right now the United States Department of Education is one of those agencies. With Secretary Duncan at the helm, with Assistant Deputy Secretary Jim Shelton right behind him in Innovation, we now are looking at STEM education in a much more transdisciplinary way – in the way that I had learned to teach. Therefore, what we look



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at nationally is how then can we implement this in order for our children to be not only STEM literate but become literate technologically throughout, in their lives.

We know we have a problem in a pipeline. We know that we need a workforce that's innovative, that is going to fulfill the importance in economic vitality for our nation, particularly now that we've had such economic crisis. We know that technology is the key to that, it is the lynch pin. But our children come into our 9th grade classes with 5th grade mathematics, so first and foremost, we have to address that- how does STEM help to do that? And how does STEM help to turn the great big boat we call public education in the water, slowly as it might be, to face those kinds of realities? And so there are systems that support this. So STEM throughout our nation now is the call to arms, the Race To the Top Fund on the stimulus money coming out of the Department of Education. The RFP was released this week – 4.3 billion dollars as a challenge to all states. The single competitive priority mentioned in the RFP is a STEM priority. It asks that there is business and industry involved. It asks that technology and engineering be involved. So it is a call to arms from our highest offices. Now it is for our states to decide how to address this, for our educators, and finally for the STEM community to lead STEM education so that we become a single community of practice. It is important also that we do this by building infrastructures that we don't have.

We do not have a robust national network in STEM education. Instead, every state does their own, every company does their own, every technology vendor, and so on. Instead of thinking about it that way, what would it be like if the nation were networked- that we grew state STEM networks that attached to a large national network that gathered these wonderful pieces and what we know to be true in engaging these youngsters and pushed it out to all: to the quietest of states, to the most remote areas, and to our urban children and to educators. With that in mind that's exactly what the call to arms is right now from the White House. We will hear this very shortly, that there needs to be a national network, that business does need to be involved, and that once and for all we need to be a single community, a STEM community in which the technology and engineering take its rightful place along science and mathematics. So it's a very exciting time to be in this work, and it's a very important time because in the end we will decide as a country whether we're going to be in service to the global community, or we're going to be innovators in leading the global community, and that's the legacy for our youngsters. Right now is the moment for that to happen.