

# STEM READY AMERICA

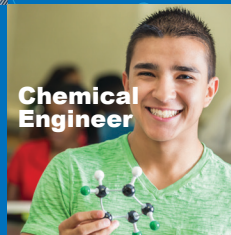
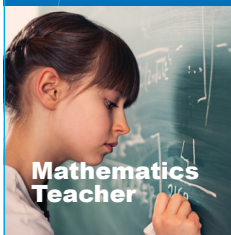
Inspiring and Preparing  
Students for Success  
With Afterschool and  
Summer Learning

This collection of articles is excerpted from a new resource, *STEM Ready America: Inspiring and Preparing Students for Success with Afterschool and Summer Learning*. In this volume, Executive Editor Ron Ottinger and Contributing Editors Cary Sneider and Ian Hickox have collected expert perspectives on the state of the field of STEM learning—especially in afterschool and summer learning opportunities.

Collectively, these writings from more than 40 thought leaders highlight how young people are developing STEM knowledge and skills that will prepare them to be successful in school today and the workforce tomorrow.

The articles provide persuasive evidence and real-world examples to inform effective partnerships, policies, and actions to bring quality STEM learning to children and youth across the nation. This volume is focused in three key sections:

- ▶ **The Evidence for STEM**
- ▶ **Partnerships for STEM Learning**
- ▶ **Ensuring Access to Quality STEM Learning**



Developed by STEM Next with support from the Charles Stewart Mott Foundation, *STEM Ready America* builds on the award-winning 2013 publication *Expanding Minds and Opportunities: Leveraging the Power of Afterschool and Summer Learning for Student Success* edited by Terry K. Peterson, Ph.D., which made the definitive case for the power and effectiveness of afterschool programs and summer learning.

For more information about STEM Ready America and to download articles visit: [www.stemreadyamerica.org](http://www.stemreadyamerica.org).



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# Making Way for STEM Afterschool in New York State

**Mary Ellen Elia**, New York State Commissioner of Education

**Andrés Henríquez**, Vice President of STEM Learning in Communities at the New York Hall of Science

**Ronald Ottinger**, Executive Editor

STEM Next | Charles Stewart Mott Foundation



As the New York State Commissioner of Education, Mary Ellen Elia oversees more than 700 school districts that together serve approximately 3.2 million students. In an interview with Andrés Henríquez, Vice President of STEM Learning in Communities at the New York Hall of Science, Commissioner Elia discussed the work of improving STEM learning, the value of a balanced curriculum, and the importance of career and technical education and afterschool programs to expanding STEM learning opportunities and developing the workforce pipeline in communities throughout New York State.

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**Mr. Henríquez:** Given the degrees of freedom that the out-of-school time programs have, do you see any advantage in working with young people in these programs to develop a greater interest in STEM learning, particularly when it comes to career readiness?

**Commissioner Elia:** Oh, absolutely. The earlier we put hands-on learning in kids’ programming the better. I have been to some of the city’s pre-K programming and STEM has been included in their curriculum. I think this is an important step, but I will tell you, afterschool programming might be the best area right now for us to see a growth in STEM.

It is very important to begin these programs early and make sure that they are sustained—not just the year that kids take a science test—but that it is sustained so they can get engaged in science. When kids are engaged, they are going to start thinking about careers in science and what they can do that is interesting to them. They’ll also have opportunities in afterschool programs to visit various industries or community-based settings where they can be exposed to a lot of different science and technology ideas and careers.

More broadly, we have got to move the needle to where science is a critical part of every day in an elementary school, and that it is integrated across curriculum areas. We are in the process of making that transition, but it is going to be slow.

**Mr. Henríquez:** There are a number of regions in New York State that are looking to improve their workforce and, of course, their economies through the workforce. A number of them are reimagining STEM education and bringing together informal and out-of-school time organizations, along with pre-K–16 education systems. What role do you see science, technology, engineering, and mathematics—and STEM education in general—playing in the growth of these regions and ecosystems in New York State?

**Commissioner Elia:** The reality is that we have to think about what our students will do when they walk out of our high schools. There is a wide range of available STEM careers, but I don't believe our students have knowledge of that. I also don't believe that our parents are properly informed about the opportunities in STEM. There is an enormous amount of work to be done because we really aren't where we need to be. It has not been an agenda in the state—but we are really trying to shift that.

**Mr. Henríquez:** Can you talk a little about what some of the barriers are for getting this done? Why is this so slow?

**Commissioner Elia:** In New York state, the focus on English language arts (ELA) and math has taken the air out of the room, and there hasn't been a strong voice to say that all of these other parts of a curriculum that have been eliminated are important. We have to reestablish them. My efforts have really been organized around trying to put the concept of an integrated curriculum back in the vocabulary of New York. This has to include a very rich science program.

Afterschool programming is a key part of implementing an integrated curriculum. Until we can get teachers doing it every day, all day, we have to rely on after school programs that provide STEM learning opportunities so that for now, at least, we can have reasonably full programming for kids in all levels in all areas.

**Mr. Henríquez:** As in-school and out-of-school time initiatives are becoming more porous and issues of education workforce are continuing, what are the opportunities for out-of-school time and STEM learning or CTE learning to support expanded career pathways for our young people in the state?

**Commissioner Elia:** Last year, New York put targeted funding into the budget for 225 school districts that were considered the highest need as well as funding specifically for community schools. So, let me give you an example. Buffalo community schools are open early in the morning and stay open late at night. Late at night is, say, 7 o'clock, and the kids can stay there until then and participate in the afterschool activities that are going on. Buffalo also has adult programming in place, as well as some CTE programs that support adult learning.

The fact that the state has really embraced the concept of schools, and especially community schools, becoming much more open and responsive to the needs of parents and kids lends itself well to the kind of work where we can integrate out-of-school time programming—for instance, an afterschool science camp.

As we move forward, we are going to be doing some conferences and presenting best practices. It will be very important for us to see some of those practices that have been particularly successful because we could then get them out to these districts who can say, "Well, I have got an afterschool program already in place here or a community school in place here. I can add to it and make this available for students."

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**Mr. Henríquez:** Can you say a little bit more about the plans for New York State to address issues around STEM and college and career readiness in schools and afterschool?

**Commissioner Elia:** There has been much discussion about what we can do to encourage the kind of focus that we know needs to be on that postsecondary availability and the opportunities for kids to be well prepared when they walk out of high school.

We are going to take every single opportunity to discuss it across the state. We have put together a team of people, who represent over 110 organizations and stakeholder groups, that is coming up with the high concept ideas they believe should be included in our state ESSA plan. We have had over 50 meetings across the state and we have a plan for another 50 as well as probably eight to ten hearings.

We have a focus on the concept of equity and, secondly, improving teaching and learning. Within those two major areas, we are looking at all of the things that we can say if we were able to put in place in our plan to focus, for instance, on higher level coursework, CTE programming, how can we make that work to incentivize and put our schools in a position that they have to think about making opportunities available for learning for all students.

“This idea of a well-rounded, balanced curriculum. We don’t have it. We have got to get it.”

We have some great models; East Syracuse is one of those models. The superintendent there has done some incredible work. The challenge is that it is only one model and we need to duplicate that across the state.

**Mr. Henríquez:** Do you have thoughts on how some of the really strong efforts that are taking place in certain communities, like East Syracuse, could be scaled up statewide? How can we move from these initial efforts to broader implementation?

**Commissioner Elia:** The bottom line is if you get everybody in a room together and talk about how we all have the same goals for the students and the community and we can identify the resources that we have, in the end, that is a very powerful movement that I think can make a difference in communities. We are kind of at the precipice of getting everybody together and saying, “OK, here is the model that I think will work.”

We recently had our first best-practices meeting, specifically for the state’s receivership schools. It was a conference, if you will, of best practices where we turned over the microphone to leaders of schools that had made some really incredible gains so they could present to other schools. I can’t tell you how critical that was because school leaders then started to realize, “I am not just talking to somebody who is in a suburban school district and has twice the money I have. I am talking to leaders of other schools that are in the same category as mine, and they have done some really good work.” It was very powerful that we had that happen by bringing them together and letting them learn from each other. We need to reestablish the fact that our teachers and our practitioners who are doing great things have to be held up as great models.

“We are trying to make sure that English language arts and mathematics are really infused and integrated into science, social studies, art, music—the things that we all know should be in a balanced curriculum.”

I think that gives us the route to put some of these programs in place and show them off to others. One of the schools in Buffalo, for instance, has a spectacular afterschool program, and chances are that it is going to be something to do with STEM. We take that program and we model it for schools that are in similar areas across the state and hold it up as a model that they can use. The educators that do the modeling are the ones that have made it work in their own school.

Separately, at a recent Regents meeting, we adopted new science standards for New York. They are very focused on hands-on learning, early intervention, and early involvement in science. I think it is extremely important that as we are focusing on the work that needs to be done in English language arts and mathematics, so that science also becomes part of an overall curriculum plan, not just a focus on math and ELA. We are trying to make sure that English language arts and mathematics are really infused and integrated into science, social studies, art, and music—the things we all know should be in a balanced curriculum.

It took us about three to five years to put the standards together because, unlike some of the previous work that has been done in English language arts and mathematics, and the incorporation of Common Core, the science

standards were driven by science teachers and that has been extremely powerful. It was a great model for us. We did the same thing with social studies.

Now the teachers are the ones who are able to lead the discussion on the implementation of the science standards across the state. They put together resources and will be doing training on the standards. That is a huge step in the right direction for us. The fact that teachers are the leaders in this, and can be the voices in supporting implementation, is a big help.

**Mr. Henríquez:** One of the things happening in New York and across the country is that we have seen a huge shift in demographics. What are some of the benefits and the challenges regarding STEM and CTE and out-of-school, in this context?

**Commissioner Elia:** One of the best things that has happened is that the community school model has opened up afterschool programming for communities, particularly because families can then access services that can support them and their children.

We have places like Utica and Yonkers that have really taken the idea of community schools and been responsive to the needs of the population that they are serving. There is an emphasis on trying to provide more services and one of those areas ends up being afterschool programming.

“The world has changed so much that there are lucrative careers that do not necessarily require college. The pathways to some STEM jobs require a different kind of postsecondary training.”

**Mr. Henríquez:** If you can imagine New York’s educational system in 2025, what might be some of the areas you would like to point to as your legacy?

**Commissioner Elia:** A couple of things. One of these is this idea of a well-rounded, balanced curriculum. We don’t have it. We’ve got to get it. We have to reestablish an integrated curriculum in New York. Science can be infused across all subject areas. If you think about it, there is always a science or a math lesson that can be put in place. Teachers need to see the importance of that integration as a natural way for kids to learn. I think that much more success will come that way.

Secondly, the world has changed so much that there are lucrative careers that do not necessarily require college. The pathways to some STEM jobs require a different kind of postsecondary training. Such opportunities would be extremely important for the development of New York’s economy.

New York is made up of many small but very proud communities. Often parents will say, “I want my son or daughter to come back and live in this community.” For that to happen, we have to create opportunities for kids who have different skills and interests to succeed in getting good jobs. Career opportunities coupled with good CTE education programs can make that a reality for our kids.

Those are the things that I want to be part of my legacy. I want to open people’s eyes to the ways that they can succeed in life.

**This interview has been edited and condensed.**



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## About the Authors



MaryEllen Elia is the New York State Commissioner of Education and President of the University of the State of New York (USNY). In this role, she oversees the work of more than 700 school districts with 3.2 million students; 7,000 libraries; 900 museums; and 52 professions encompassing more than 850,000 licensees. A native New Yorker, Commissioner Elia has 45 years of experience as an educator. Prior to her appointment in New York, she served as superintendent of schools in Hillsborough County, Florida, for 10 years. In Hillsborough, which includes Tampa and is the nation's eighth largest school district, she successfully implemented higher learning standards, partnered with teachers to develop a comprehensive evaluation system, and earned national recognition for gains in student achievement. For this work, she was named the 2015 Florida Superintendent of the Year, a recipient of the 2015 AASA Women in School Leadership Award from the School Superintendents Association, and was one of four finalists for the 2015 National Superintendent of the Year award.



Andrés Henríquez is the vice president of STEM in Learning Communities at the New York Hall of Science (NYSCI), where he leads the Queens 20/20 initiative. He previously worked as a program officer at both the National Science Foundation and the Carnegie Corporation of New York. He also served as Assistant Director at the Center for Children and Technology (CCT) where he led a partnership between Bell Atlantic and the Union City schools in New Jersey. At Carnegie Corporation, Henríquez launched a national program of work focused around adolescent literacy and also funded and oversaw the development of the Next Generation Science Standards including the National Research Council's (NRC) *Framework for K-12 Science Education*, and the funding of Achieve Inc. to develop the framework-aligned *Next Generation Science Standards*.