National Inventors Hall of Fame®

INVENTIVE SOLUTIONS FOR UNCERTAIN LEARNING ENVIRONMENTS

Educators are exhausted. When 2022 began, the optimism many school district administrators once had for a more normal academic year was hampered by the challenges of a new variant and an associated uptick in COVID-19 infections across the country. In addition to health and safety risks for school communities, this surge brought a logistical nightmare for school leaders seeking to provide the best possible education for their students in the face of staff shortages[1] and building closures.[2]

Now more than ever before, school district administrators nationwide are facing seemingly impossible questions: What can they do right now to support their students and teachers, and what steps can they take to navigate future pandemic-related challenges?

At the National Inventors Hall of Fame® (NIHF), we believe the answer for districts is to consider invention education: a type of learning that not only adapts to a district's unique needs but is perfectly suited to help students thrive during times of uncertainty.

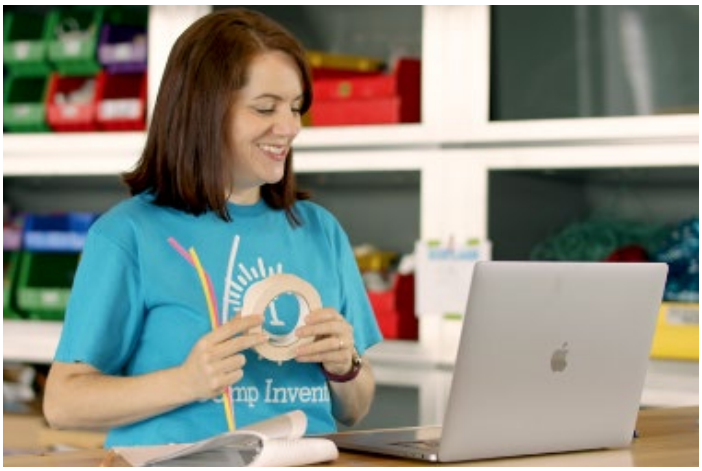
Step 1: Embracing an Innovation Mindset

For over 30 years NIHF has been privileged to work with the world's greatest inventors, our Inductees[3], to develop STEM (science, technology, engineering and mathematics) programming that has inspired millions of students across the country.

Through years of gathering their insights, we have identified the essential skills and traits that unlock creative potential. We call this the Innovation Mindset™.

Innovation Mindset Chart

These nine elements not only represent our authentic approach to invention education, but like the innovators who have used them to change the world, they represent a powerful collection of attributes that can give children a sense of control during this time of uncertainty. By working together to create invention prototypes to solve real-world problems, we believe today's students are best served by pedagogy that combines social-emotional learning (SEL) techniques with hands-on exploration.



Should you need virtual or blended components, we have the tools.

As educators, we must accept that traditional educational strategies from the past might not be as effective in our current environment. During a time when unexpected coronavirus outbreaks might occur at any moment, NIHF believes decision-makers should themselves adopt an Innovation Mindset and have the courage to try something new, utilizing academic solutions that are flexible enough to adapt to an educator's needs at a moment's notice.

Step 2: Weave SEL Into Your Learning Strategies

On Nov. 9, 2021, the National Summer Learning Association hosted an event highlighting our current educational climate and providing a sense of direction for districts nationwide looking for solutions.

Moderated by Margaret Brennan from CBS News' "Face the Nation," one of the event's key speakers was Miguel Cardona, U.S. secretary of education. Cardona, who previously served as the commissioner of education in Connecticut, is a strong believer in the power of collaborating and connecting school districts with educational partners and stakeholders to maximize student outcomes.[4]

1. Gecker, J. (2021, September 23). Covid-19 creates dire US shortage of teachers, school staff. AP News. Retrieved January 11, 2022, from https://apnews.com/article/business-science-health-education-california-b6c495eab9a2a8f1a3ca068582c9d3c7
2. North, A. (2022, January 5). America doesn't have enough teachers to keep schools open. Vox. Retrieved January 11, 2022, from https://www.vox.com/the-goods/22868641/chicago-school-closings-omicron-covid-remote-learning
3. The National Inventors Hall of Fame. (n.d.). Hall of Fame Inductees: National Inventors Hall of Fame®. Hall of Fame Inductees | National Inventors Hall of Fame®. Retrieved January 11, 2022, from https://www.invent.org/inductees
4. U.S. Department of Education. (2021, November 16). Dr. Miguel Cardona, Secretary of Education - Biography. Retrieved January 11, 2022, from https://www2.ed.gov/news/staff/bios/cardona.html

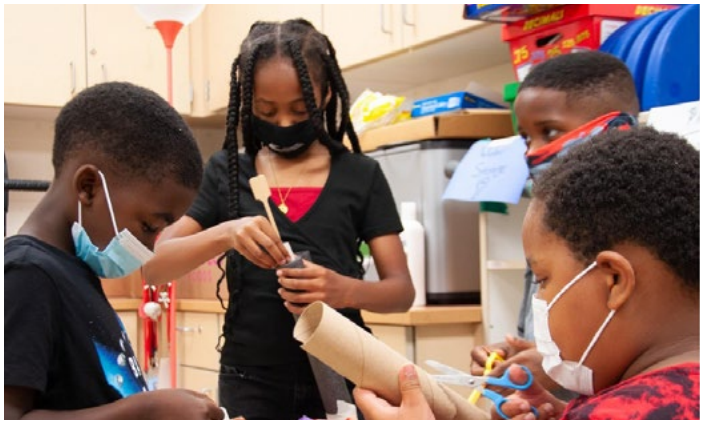
In his conversation with Brennan, Cardona spoke frankly about the pandemic's impact on students beyond academics.

"Think about the social emotional well-being of our learners," Cardona said. "Kids missed out on being with kids and that's why it's critically important to have programs like the ones that were fostered by the folks in this room over the summer where kids were able to engage with one another on an interpersonal level for that social and emotional well-being."[5]

Miguel Cardona

Alaina Rutledge, NIHF's vice president of education research and development, shares Cardona's belief in the importance of SEL and prioritizes its integration within all NIHF education programs. All great inventors must first empathize with the needs of others before beginning the prototyping process, and this is embedded within all our STEM curricula.

"Empathy helps us identify with the feelings, thoughts and attitudes of children and teachers, and even within ourselves," Rutledge said in an article published on NIHF's website. "Empathy also allows us to imagine what it is like to be in another person's shoes, feeling the emotions that someone else might have in different situations. Inventors often tap into this sense of empathy as they imagine what others might wish for, desire and need."[6]



Children work together and gain valuable social-emotional learning experiences.

No longer can SEL be considered a "nice to have" feature of today's academic curriculum. While much has been written and researched about the pandemic-related learning loss children have continued to suffer due to school closures and unequal access to remote learning solutions,[7] as Cardona mentioned throughout his conversation, the emotional well-being of students cannot be ignored.

Sharon Hoover, co-director of the National Center for School Mental Health, agrees and in an article published by the Pew Charitable Trusts, advocates for schools to invest in their students' mental health and emotional well-being.

"Nearly every child is suffering to some degree from the psychological effects of the pandemic," Hoover said. "That's why schools need to invest now in the mental health and well-being of our kids in a broad and comprehensive way—not just for children with learning disabilities and diagnosed mental health conditions, but for all students."[8]

For Cardona, one of the keys to naturally integrating SEL is to not simply ask overwhelmed educators to do "one more thing." Instead, he advocates for district administrators to use the federal and state funding at their disposal to be innovative and to reimagine education to better serve children now and in the future.

"We signed up to help the next generation of leaders develop critical skills, critical thinking, learn how to engage with people that think differently than them," Cardona said. "We have a responsibility and obligation to make sure our schools are better than they were before, and that means using every single dollar of American Rescue Plan funds to make sure that the programming is better for our students."[9]

Children empower the use of their imagination.

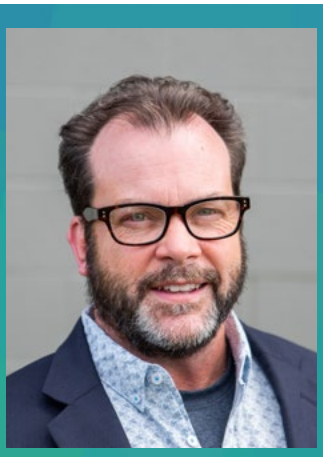
Step 3: Implement a Solution That Adapts to Your District's Needs

While Cardona's words are inspiring, many district administrators determining how to best allocate their funding resources are experiencing decision fatigue. Because of the unpredictable and ever-changing nature of the pandemic, academic solutions that might work in an in-school setting might not be effective in a virtual one.

This complexity can sometimes lead to inaction, as school and district leaders struggle to identify solutions that will prove effective in a variety of settings and situations. Increasingly[10], educators have started to adopt an acronym from the business world to describe our current environment: VUCA (volatility, uncertainty, complexity and ambiguity). Together, these words accurately describe environments that at first appear outside our control.

5. National Summer Learning Association. (2021, November 14). Seizing this Watershed Moment in Education. YouTube. Retrieved January 11, 2022, from https://www.youtube.com/watch?v=ZaYFpzDSE-U
6. The National Inventors Hall of Fame. (2021). Empathetic At-Home Learning. National Inventors Hall of Fame®. Retrieved January 11, 2022, from https://www.invent.org/blog/trends-stem/learning-empathy
7. Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2021, November 11). Covid-19 and education: The lingering effects of unfinished learning. McKinsey & Company. Retrieved January 11, 2022, from https://www.mckinsey.com/industries/education/our-insights/covid-19-and-education-the-lingering-effects-of-unfinished-learning
8. Vestal, C. (2021, November 8). COVID Harmed Kids' Mental Health-And Schools Are Feeling It. COVID Harmed Kids' Mental Health-And Schools Are Feeling It | The Pew Charitable Trusts. Retrieved January 11, 2022, from https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2021/11/08/covid-harmed-kids-mental-health-and-schools-are-feeling-it
9. National Summer Learning Association, (2021, November 14). Seizing this Watershed Moment in Education. YouTube. Retrieved January 11, 2022, from https://www.youtube.com/watch?v=ZaYFpzDSE-U
10. Bushweller, K., & Harris, E. P. (2021, April 27). Vuca: What it is and why it matters to schools. Education Week. Retrieved January 27, 2022, from https://www.edweek.org/leadership/video-vuca-what-it-is-and-why-it-matters-to-schools/2021/04

In a recently published blog, NIHF CEO Michael J. Oister detailed the nonprofit's own VUCA moment, and how that pivotal experience shaped the way the organization designed its educational programs.



The National Inventors Hall of Fame® (NIHF) experienced its own VUCA moments in 2020 and then again last year. In 2020, when the first waves of COVID-19 began spreading nationwide, we realized we needed to transform our flagship in-person STEM experience, Camp Invention®, to better serve the needs of parents who wanted a virtual summer camp experience for their children. Our organization developed an innovative at-home solution known as Camp Invention Connect®, which provided students with all the materials needed for a full week of camp, individually packaged, and sent to homes across the country to allow educators the ability to guide hands-on activities virtually.

In 2021, we reinvented ourselves once again by transforming our Camp Invention program into a customized solution to fit the unique needs of school districts' summer recovery efforts. Understanding that students needed hands-on collaborative experiences that embrace social-emotional learning (SEL), we developed curricula that foster these experiences in any learning environment.

The success of these programs was the result of companywide efforts. Team members from all our departments came together to help pack materials in our state-of-the-art warehouse, volunteered to work on the weekends and developed innovative solutions that continue to benefit our education partners, with their customized program needs, and their students today.

During this unique time in our history, when the weight of VUCA can cause fear-induced inaction, NIHF believes the solution for both students and teachers is to embrace the type of learning perfectly equipped to give children the confidence to navigate ambiguity by embracing invention education.

Our organization's own response to VUCA and subsequent development of novel invention education solutions gave us the flexibility to develop a variety of STEM Kits that qualify for ESSER funding and can adapt to your district's unique needs to provide three solutions in one.

"There was a need to think outside the box to give our teachers stress relief and more planning time while still providing learning opportunities for students. The National Inventors Hall of Fame provided ready-to-go lessons and minimal prep for Instructors. — ***Dan Snowberger, Power Zone Superintendent in Falcon School District 49, Colorado***"

One Solution That Incorporates All Three Steps

In response to the unique challenges schools are facing across the country, at NIHF we have applied our decades of experience to develop STEM programming and create individually packaged STEM Kits that can adapt to a district's immediate and future needs. From building unique devices for exploring the outer reaches of space to using creative problem-solving skills to build the ultimate sports complex, each STEM Kit is packed with opportunities for students to tap into their natural curiosity. These activities are augmented with digital resources and include interactive videos and step-by-step scripts, allowing for seamless implementation in any setting.

Three Solutions in One

Our STEM Kits adapt to districts' unique needs.

1. Give Teachers a Break
Use our STEM Kits to provide your teachers with additional planning time during the school day. Each self-contained package includes everything students need to have fun and academically enriching experiences.

2. Provide Virtual, Hands-On STEM Learning
As a part of your district's hybrid or virtual learning strategy, use our STEM Kits to offer engaging hands-on STEM exploration at home. Educators are given step-by-step instructions and interactive resources to ensure success.

3. Offer a Quality Self-Led Curriculum
Prepare for unexpected building closures by sending our STEM Kits home with students to work on independently. These kits can also be distributed to children during the summer months to help close learning gaps.

Visit our website to learn more about how NIHF's STEM Kits provide solutions for an uncertain environment.

"Students can do it at home and they're fully supported to be able to do that with a teacher and/or their family and/or they can do it in school with the teacher when they're in school. The fact that every student is going to get a kit and there are also activity books in Spanish — our population has a high number of Spanish-speaking families, [so] it was a perfect match. The teachers saw what could typically be barriers, not a barrier. — ***Laura Winter, Director of Special Projects, STEM Department at the New York City Department of Education***"