Understanding the world through STEM

Adapting math and science education gives students real-world tools to thrive.

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Letter from Perkins’ President and CEO

Perkins School for the Blind has a history of delivering advancements in education and services for those with visual impairment. Still, what impresses me most is the organization’s focus on what’s next—how to expand and tackle new challenges.

This issue of In Focus looks at a few of the many initiatives underway that exemplify that spirit.

Science, technology, engineering and math (STEM) studies are vital to success. Over time, Perkins has developed a dynamic curriculum to teach these staples to students (page 2). Today, our educators are sharing their skills and best practices with public schools so they, too, can more effectively teach STEM to their students with visual impairments.

Cortical visual impairment (CVI) is now the leading cause of blindness for children in the U.S. Caused by damaged pathways in the brain, CVI is often misunderstood and misdiagnosed. See how Perkins’ Ellen Mazel and her team shed light on CVI (page 4) and developed tools, partnerships and pathways to help affected children “learn” to use their vision. This past summer, Perkins also continued to grow this initiative with the first-ever CVI Family Vacation and outreach to public schools.

You’ll also read about College Success@Perkins (page 1), a program that teaches skills necessary for success in higher education, career and life. Again, Perkins is continuously evolving and advancing, this time by helping young adults transition post-high school.

I’m proud that Perkins never rests on its laurels and that supporters like you recognize there’s more to be done. Together, we’ll continue to make a difference and build on our legacy.

Warmly,

W. David Power
President and CEO

Established in 1829 as the nation’s first school for the blind, Perkins today impacts the lives of children and young adults who are blind, deafblind or visually impaired with additional disabilities, as well as educators, professionals and caregivers. Our reach extends across the nation and the world. The school is an accredited member of the New England Association of Schools and Colleges. It is licensed by the Massachusetts Department of Elementary and Secondary Education and by the Department of Early Education and Care. Perkins does not discriminate on the basis of race, color, religion, gender, national or ethnic origin, disability, age or sexual orientation.
PERKINS KICKS OFF COLLEGE SUCCESS PROGRAM

College Success@Perkins is now underway! The inaugural class, all young adults with visual impairments, will spend the next nine months learning the skills they’ll need to thrive in a higher education environment. Designed to prepare participants for the classroom and campus life, the program’s goal is to empower every participant to graduate from college. This year’s 10 participants hail from six different states across the country, from the East Coast to the Midwest.

PERKINS STUDENT CONQUERS SCOTTISH MOUNTAIN

Myat Haggart, a student in Perkins’ Deafblind Program, climbed a mountain this summer—and we don’t mean metaphorically. The 12-year-old climbed Scotland’s Dumyat Hill this past August and checked off a bucket list item that had been interrupted by surgery and medical treatment. In climbing the hill from which his first name is derived, he also raised nearly $2,000 for Perkins. “We can think of no better cause than giving back to the very school committed to helping Myat achieve all he’s capable of,” his family said.

WORLD SIGHT DAY PROMOTES “EYE CARE EVERYWHERE”

The International Agency for the Prevention of Blindness (IAPB) commemorates World Sight Day on the second Thursday of every October to bring global attention to blindness and visual impairment. This year, IAPB endeavored to promote accessible eye care for all in the face of persistent inequality. How can you help effect change? Act locally. “Plan for an eye examination,” the group says. “[Then] look around in your family, especially for those who are vulnerable” and help get them one, too.

DEAFBLIND STUDENTS SHARE ARTISTIC VISION

Perkins hosted its annual Deafblind art show this past July, showcasing students’ boundless creative talent for friends and family. Now in its eighth year, the exhibition also highlights the importance of an artistic education, one centered around tactile creativity, for children with visual impairments. “Art is a great way for students to express themselves, but it’s also such a great sensory experience,” said Perkins teacher Sara Espanet.
How Perkins adapts math and science education to give students practical, real-world tools both on and off campus.

BY KATHERINE J. IGOE

Secondary students at Perkins School for the Blind are learning to make a chemical equation. One student, representing sodium (Na), stands next to another representing chloride (Cl). Kate Fraser, science teacher, holds a “yield” arrow. To her left stand two students linking arms: NaCl.

Fraser explains how joining two elements creates a new compound, entirely different from its components. “You use NaCl every day: it’s salt!” she exclaims.

Perkins has been teaching math and science in some form for over 180 years, but they’ve evolved critically since then. Today, a science, technology, engineering and math (STEM) education curriculum helps students integrate into a technology-driven world and develop practical life skills.

This recent emphasis on process and practicality may be new for some, but not Perkins.

While Fraser has watched these subjects change over several decades, the curiosity and passion they evoke are still the same. “Science studies the world around us,” she said. “Students here can learn to know it on different levels. I meet the student where they’re already at, understand their method of learning and go from there.”

The curriculum mirrors what’s taught in public school but is adapted for students with visual impairment through braille textbooks, assistive technology, raised line graph paper, braille/large print measurement tools, Wikki Stix and more. Perkins also has a public Accessible Science webpage showing ways to tailor lessons and materials.

Accommodations can make all the difference in subjects that usually rely on vision to convey ideas. “When students come here, everything is automatically adapted for them, so that stress is gone,” said math teacher Susan Sullivan. “Students are able to master concepts they might not in a typically paced class.”

Fraser believes that touch and sound are also critical. “I teach students to hear the sound of a jug being filled with liquid, so they know when to stop pouring,” she said. “I also try to get students outside. They can experience earth science by collecting leaves, feeling the texture of moss, listening to the sounds of nature.”

Students regularly come in contact with STEM professionals like Amy Bower, a physical oceanographer at the Woods Hole Oceanographic Institution who’s legally blind. Some students go on to pursue STEM learning in college or professional training, and their former Perkins educators often offer support and even help find accommodations.
No matter what, students can use their learning out in the world. “There’s a quote on my syllabus: ‘Math is like going to the gym for your brain—it sharpens your mind.’ Math teaches critical thinking and perseverance, facing something hard and comprehending it,” said Sullivan.

Generous donors like the Cabot Corporation Foundation make this possible. Jim Kelly, VP and corporate controller for Cabot Corporation, said, “An important part of our mission in community giving is to promote STEM education. Designing engaging curriculum is challenging, even without the added complexity of teaching students who are visually impaired.

“Through our support, students can receive more individualized instruction. We hope it gives them access to both college and employment opportunities.” Cabot Corporation funds the Perkins’ Annual Science Fair, math teaching assistants and standardized test prep.

Perkins educators also work with teachers in public schools who instruct students with visual impairments. To that end, Fraser is developing a course supporting accessible STEM education at the University of Massachusetts Boston. The course is aimed at teachers with students who have different needs across schools and grade levels.

“I’d love to see more resources to support integrated STEM education, not just through assistive technology, but in the field too,” she added. “There’s always more to do.”

PROFILE
Vaithiehi Muttulingam TRUSTEE

The chair of the Perkins Solutions Committee, Muttulingam also serves as a member of the Audit and Perkins International Committees and the Trust Board.

How did you first get involved with Perkins?

My husband and I attended the Annual Gala more than a decade ago, where we heard from a young man with visual impairment from Kenya who came to study at Perkins. He spoke about his life before Perkins, a time when he wanted to be invisible, and his life after, when he was no longer afraid to belong, to advocate for himself. I found his story incredibly powerful, as my husband and I spent our childhoods in various parts of Africa and Asia where the blind often had no realistic path for a meaningful future. When we left that gala, I remember Bala, my husband, saying, “I had no idea there were so many options.” So, years later, when I retired, I asked, how can I help?

Why do you continue to support Perkins?

There are 19 million visually impaired children globally being underserved, denied the opportunity to live a productive life. Perkins has the tools and the engine to effect change, to teach these children, to empower families and communities and to advance global progress. My husband and I could not possibly walk away from a solution that is so immensely impactful, meaningful and attainable.

What excites you about the future at Perkins?

The leadership. Perkins is led by a group of visionaries who think strategically and are undaunted by the task ahead. That gets us excited. Perkins is at the forefront of major cultural and social changes, not just domestically but globally, and that’s an incredible force to be behind.
Shining light on the fastest growing cause of blindness

Our experts are teaching the world about cortical visual impairment to help children improve their use of vision.

BY DAVID EISENBERG

There’s been a significant shift in the field of visual impairment in recent years with a single disorder emerging as the new leading cause of blindness among children in the U.S.

CVI, short for cortical visual impairment, is caused by damage to the visual pathways or processing centers in the brain. The disorder is still widely misunderstood, however, due to a lack of diagnostic tools in the medical field and the pervasive view among educators that visual impairment is strictly an ocular issue. As a result, a growing number of children who have this hidden disability are going undiagnosed.

Perkins School for the Blind is leading the charge to correct course and, in turn, is helping affected children learn to use their vision.

“As we work with kids on campus, we’re getting a stronger handle on best practices to share with the wider community,” said Ellen Mazel, CVI Project Manager at Perkins. “At the same time, we’re helping students improve their vision. That’s the greatest gift.”

Perkins is well ahead of the curve in the classroom, building individual education plans for children with CVI and sharing strategies with public school districts. These educational blueprints are uniquely designed to promote visual improvement. For some, that means making use of color or movement to support visual attention, while for others with acquired brain injury, it means tapping into pre-existing visual memory.

Meanwhile on the medical front, Perkins has devised innovative screening and assessment tools to help diagnose CVI. To further their use, partnerships have been established with such leaders as Massachusetts General and the New England Eye Clinic, Boston Children’s Hospital and Brigham and Women’s Hospital.

“There’s progress being made because the dialogue is happening now,” said Dr. Lotfi Merabet, a neuroscientist who has partnered with Perkins in its CVI research. “Perkins has decided to be the backyard for this conversation, where parents, clinicians, researchers and educators come together.”

Advancing this understanding is ultimately so important because affected children can, in fact, learn to use their vision to varying degrees. But only through increased understanding can it be determined what’s possible, according to Mazel.

“My hope is everyone builds an understanding of CVI so every kid has the possibility of improvement in vision,” she said. “From there, you just wonder where that will go.”

A HISTORY OF ACTION

Perkins has a long history of addressing public health issues like CVI well before the general populace. When the rubella epidemic swept the U.S. in the 1960s, for instance, our experts anticipated the demands of the thousands of babies who were born blind and deafblind as a result, adding classrooms, residences and evaluation suites. That added capacity proved invaluable: Perkins’ deafblind population grew tenfold in the years after the rubella outbreak, from 8 students in 1953 to 81 in 1976.
The importance of a formal education cannot be understated. At Perkins, though, we believe it’s equally important to advocate for the blindness community outside of the classroom.

That’s why, in addition to leading Perkins’ Braille and Talking Book Library, I serve proudly as the first woman President of the American Council of the Blind (ACB). Since being elected in 2013, I’ve led the organization’s efforts to improve the quality of life for all blind and visually impaired people. And I’m immeasurably proud of the work we’ve done.

For instance, we couldn’t have built our Perkins library collection of more than 1,500 commercially available audio-described DVDs without the passage of the Twenty-First Century Communications and Video Accessibility Act of 2010. Long supported by Perkins, ACB and myriad other advocacy groups, the legislation restored and expanded upon video description obligations previously introduced by the FCC for television programming.

And this past September, after years of encouragement from these same supporters, the Marrakesh Treaty passed over the legislative finish line. If ultimately signed into law, the sweeping, bipartisan bill would directly result in hundreds of thousands of books in accessible formats being made available to countless people around the world.

We relentlessly advocate for these types of proposals because, on top of being the right thing to do, they have an enormous impact on our own work.

These efforts enable us to further build out our library on campus, which is already home to more than 100,000 fiction and nonfiction titles on countless recreational and academic topics, published in braille, large print and audio format. They also give us the resources to promote works of particular interest to our community through our monthly Recommended Reads listing. Finally, they allow us to expand our reach globally, which is imperative to promoting lifelong learning for everyone, everywhere.

Yet for all the progress we’ve made in dismantling barriers, many persist. Because of this, as we champion efforts to create a truly inclusive world, we need partners in advocating for policy change. If we are to succeed in our mission of empowering blind individuals to pursue an enduring education, we need allies. We need long-term partners willing to get vocal.

For all the momentum we’ve established, we need advocates who know the real work is just getting started.

Kim Charlson is executive director of Perkins Library. In that role, she oversees its mission of promoting literacy and providing accessible reading materials to people who are blind or visually impaired in Massachusetts, across New England and around the world.
LET THEM BE YOUR LEGACY

Support future generations of children and young adults who are blind by making a gift in your will, trust or by beneficiary designation to Perkins School for the Blind. Learn more at Perkins.org/Legacy.