

## PROFILE

**Name:** Des Moines Public School/ Hoover High School

**Location:** Des Moines, IA

**Founded:** 1967

## CHALLENGE

Use interactive display technology to support innovative and collaborative instructional spaces to upgrade the school's STEM teaching and learning capacity.

## SOLUTION

Integrate BrightLink<sup>®</sup> interactive displays to support students' design thinking and processes and to support teachers' needs to help students explore complex content visually in both whole class and smaller learning group environments.

# Redesigning for STEM

## High School's Redesigned Learning Environments Leads the Way for District-Wide Implementation of Epson<sup>®</sup> Touch-Enabled BrightLink Interactive Displays

One of Des Moines Public Schools' 10 high schools, Hoover High Schools, had a rare opportunity. Hoover High School submitted for, and won, a \$50,000 grant from the Iowa Governor's STEM Advisory Council to redesign learning environments and reinvigorate the district's STEM Academy. The district then matched the state grant, giving Hoover High School a \$100,000 budget to design spaces to inspire students to create and collaborate

"We knew we wanted to create learning environments that would be similar to what our students may encounter in college or in their future careers," said Maureen Griffin, the Science School Improvement Leader and STEM Administrator at Hoover High School. "Ultimately, we were able to design and overhaul three rooms—a "redesigned learning environment" or RLE, our Project Lead the Way classroom, and a math classroom."

### Three Different Designs, One Common Goal

Although the three rooms serve different purposes, they all reinforce the use of collaboration and technology.

The RLE is an open lab any teacher can sign-up to use for specific classes, meetings or professional development or to complete lesson planning and grading. Similar to a high-tech coffee house, the RLE has variety of work areas. The high school purchased high tables, plush chairs with built-in charging ports,



dry-erase tables and cushioned stools. They then positioned these work stations around three Epson touch-enabled BrightLink interactive displays.

Students and teachers can wirelessly connect their devices to the display, "which expedites the amount of time it takes to start presentations or share group work," said Griffin. Individuals use the BrightLink's finger-touch interactivity to draw on or annotate documents, webpages, pictures and more—and then capture these annotations. Once captured, teachers can upload the annotations to their websites for students to access at a later time or email to students who were absent. Additionally, the BrightLinks are compatible with SMART Notebook interactive software, which teachers are already familiar with so they can use their existing lessons in this space.

For the Project Lead the Way Classroom, the high school demolished a room full of cubicles to create a learning environment more conducive to exploring STEM concepts, particularly engineering. Modular furniture that is grouped together gives students a place to brainstorm ideas and they use

a mini-lab of desktop computers equipped with modeling and technical drawing software to actually design prototypes.

The BrightLink's interactivity becomes a crucial part of the design process when students project their designs to the entire class for feedback. Students use the annotation tools to suggest design improvements or help answer design problems. Students can save these annotations and use them to fuel product improvements. Once the design is finalized, they can print a prototype using the classroom's 3D printers.

Similar to the RLE and the Project Lead the Way Classroom, the updated math classroom consists of mobile desks grouped together for stations or small group work, dry-erase tabletops and a BrightLink mounted above one wall.

### Invigorated Teaching

These updated learning environments have redefined the types of lessons teachers can lead.

Students can easily congregate in groups, which better enables differentiated instruction. For example, a geometry teacher wanted her students to learn the geometry concept of transformations. Since she wanted her lesson to achieve several objectives in one class period, Griffin helped her design several different stations to meet the requirements, and students changed stations every 20 minutes.

***"...we chose the BrightLink because it was a clean, easy-to-use solution..."***

—DAN WARREN, DIRECTOR OF TECHNOLOGY OPERATIONS, CENTRAL STORES, AND PRINTING SERVICES AT DES MOINES PUBLIC SCHOOLS

Students at stations with a BrightLink used the display's finger-touch interactivity to draw geometric shapes and flip or rotate them by various degrees. Wireless connectivity to the projector allowed the teacher to roam the room and help groups as needed because she was no longer tethered to the display.

By the end of the class period, students had accomplished the different objectives the teacher selected and created a huge art piece to demonstrate their learning.

The redesigned spaces have also been helpful for preparing students to compete in The World Food Prize Foundation Iowa Youth Institute (IYI). The Nobel Prize-like student competition held annually at Iowa State University gives students the ability



to explore majors and careers related to combating global hunger and poverty, as well as present their own ideas and solutions.

To participate, students research an agricultural or food scarcity problem unique to a region of the world, write a paper detailing their solution, and present it to a panel of industry experts and professionals. Students who enter have the chance to earn scholarship funds, inclusion in the prestigious Global Youth Institute, paid fellowships with the United States Department of Agriculture, and international internships.

The updated learning environments help students prepare for the competition. Students not only create and practice their presentation using the BrightLink, they access interactive world maps and zero-in on the region they are researching. This helps bring the region—and its real-world problem—to life in the classroom.

### Spreading Impact

The redesigned classrooms have become the model for future classrooms, with the goal being to replicate the model across the entire district one day. In the meantime, Hoover High's updated classrooms have helped influence districtwide technology decisions.

"The RLE, the Project Lead the Way room, and the updated math room were the first classrooms to use the BrightLink," said Griffin. "A year later, every classroom at Hoover High had a BrightLink installed."

The following year, Des Moines Public Schools completed installing more than 2,100 BrightLink displays across the districts' 65 schools.

“When we decided to upgrade our presentation solution, we mapped critical success factors and focused on a technology that integrated better with both the curriculum and our other technology,” said Dan Warren, Director of Technology Operations, Central Stores, and Printing Services at Des Moines Public Schools. “We looked at flat panels, but we chose the BrightLink because it was a clean, easy-to-use solution that worked both with our teaching and learning environment and with our infrastructure.”

Prior to installing BrightLinks, teachers would spend a majority of a class period at the head of the classroom and students would remain seated in their rows of desks. With the BrightLink, students can get out of their chairs to interact with content and teachers can move freely around the room to ensure students get the support they need and remain engaged.

“We have completed an extensive district-wide renovation project,” said Warren. “In the last seven to eight years, we have touched and continue to evaluate every building in the district. When I look into classrooms, I see the displays being used all day long and our teachers love that the BrightLinks are compatible with the interactive software they were already using. As new classrooms are added, we will continue to outfit them with BrightLinks in order to give every student and teacher the best collaborative technology experience.”



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