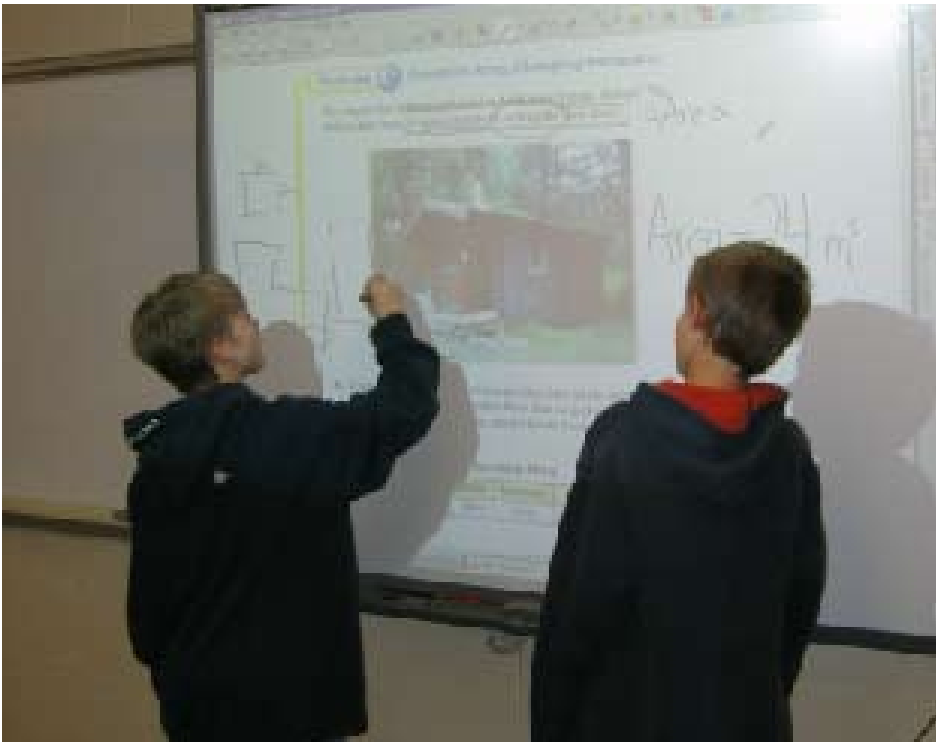


# Case Study



## Euclid Middle School Littleton, Colorado

Collaborative learning adds up to excellence in sixth-grade math

### Middle school excellence

Energy is one of the words that emerges when Euclid Middle School is mentioned. The other is excellence. And Jennifer Phillips, sixth-grade math teacher, seems to have each in abundance. One of 55 teachers in this 800-student school, Phillips believes the quality of instruction hit new heights when Euclid Middle School installed SMART Board interactive whiteboards in spring 2006, one for every classroom.

Phillips asserts the SMART Board interactive whiteboard makes her a better math teacher. She explains, "Using the SMART Board interactive whiteboard forces me to always ask myself, what's the best way to teach this? How can I get the students involved? I'm thinking through these effective teaching aspects, ahead of time."

Phillips and her peers at Euclid Middle School view the SMART Board interactive whiteboard as a tool for more effective teaching and more collaborative learning. Principal Gary Hein agrees, saying the staff is more energized because of the presence of SMART Board interactive whiteboards in their classrooms. "I see the impact of whiteboards in teacher collaboration, student engagement, real-time information and fluid lesson planning," he says.

For Phillips, the SMART Board interactive whiteboard is a powerful technology tool in her arsenal, one that not only makes her a better, more engaged teacher, but also increases her students' comprehension of the subject matter presented.

### Challenge

Use technology to facilitate whole class learning, visual representations and collaboration between students in middle-years math.

### SMART solution

SMART Board™ interactive whiteboards in every classroom and SMART's Notebook™ software Gallery.

### Case result

Teacher-led, student-centered discussions are facilitated, math scores are up and teachers are sharing best practices, lessons and ideas.

"Using technology like the SMART Board interactive whiteboard can really increase the students' conceptual understanding in a mathematics class," says Phillips. Conceptual understanding is a key to the math curriculum that she and her fellow math teachers introduced in the fall of 2006. Primarily investigative in approach, the curriculum includes a CD of completed lessons and teacher support materials, all of which are easily converted for use on the SMART Board interactive whiteboard, and lessons are saved, updated and organized using SMART's Notebook software.

## Math concepts shared on the SMART Board interactive whiteboard

Phillips introduces each new math concept to her classes (ranging in size from 22 to 28 students) by presenting a problem to them on the SMART Board interactive whiteboard. During her instruction time, she uses the SMART Board interactive whiteboard to demonstrate, in visual and graphic ways, how a math operation is done, using pictures, conceptals and models, found in Notebook software's Gallery.

Students then tackle these mathematics problems individually, in pairs, in small groups or as a whole class – all methods leading to cooperative and collaborative learning. After the students have worked through a problem, the SMART Board interactive whiteboard becomes the focal point for whole-class discussions, and provides a venue for individuals or pairs of students to present strategies and solutions to their classmates.

"The whiteboard fits so well with this hands-on curriculum. The students use it to show the algorithm or identify what the procedure is for a concept such as multiplying fractions. They can see how their solution is derived based on the work they've done. That way they recognize different ways to solve the same problem," says Phillips.

## Achieving excellence with SMART Board interactive whiteboard

Because the math curriculum has a problem solving, student-centered focus, with visuals shared on the whiteboard, Phillips believes her students are not just memorizing theorems or algorithms that they will promptly forget after a test. Her building-block approach leads students to apply previous learning to solve the next set of problems. In Euclid Middle School, this new approach to math instruction is making an impact on student achievement.

"We are in the early days with our new math program, and our use of SMART Board interactive whiteboards, but we are seeing an increase in math scores. Of course, there are likely lots of factors contributing to that, but I think these higher scores are due to the increased engagement and motivation because of the SMART Boards in the classroom," says Phillips.

## Professional enhancements

One of the extra benefits of having SMART Board interactive whiteboards, according to both Hein and Phillips, is increased collaboration at a staff level. "We're finding whiteboards are increasing our discussions on best practices and helping us incorporate the best teaching practices possible.... Interactive whiteboards make us teach more effectively, more efficiently. It's connecting us," says Phillips.

Hein agrees, adding that to date, the teachers at Euclid Middle School have created a shared database of over 2,000 interactive whiteboard lessons using Notebook software. "The boards really have become a focal point on two avenues. One is in our professional subject area learning communities, where they have become a portal for ideas to be discussed. And the second, in the implementation of the new math curriculum, the SMART Boards have become a hub around which information is exchanged, and I think in our school, that's where the power of them exists," says Hein.

Teaching is more effective. Learning is enhanced. Scores are increasing. Excellence is being achieved. That's the effect SMART Board interactive whiteboards are having on Euclid Middle School. It's an all-around winning situation.



**Students get hands-on learning opportunities at Euclid**

"The SMART Board interactive whiteboard fits so well with this hands-on math curriculum. The kids can easily show the solutions they've come up with by coming up to the board and demonstrating how they solved it. That way they recognize different ways to solve the same problem."

**Jennifer Phillips, sixth-grade math teacher, Euclid Middle School, Littleton, Colorado.**

## About SMART

SMART Technologies Inc. is both the industry pioneer and a global market leader in user-friendly interactive whiteboards and other group collaboration tools. SMART products include the award-winning range of SMART Board interactive whiteboards, interactive response systems, pen displays and digital signage as well as wireless slates, conferencing applications and software. SMART products are designed to meet the requirements of today's education and corporate environments. Teachers can access and share the information they need to improve student learning outcomes and streamline lesson planning. The SMART Board interactive whiteboard is used to teach over 15 million students in more than 500,000 classrooms in more than 100 countries around the world. SMART's education customers include New York City Board of Education (U.S.), Oxford University (UK), Kobe City Board of Education (Japan), Barnier Public School (Australia), University of Ottawa (Canada), United World College (Singapore), Stephen-Hawking-Schule Neckargemuend (Germany), Florida School for the Deaf and the Blind (U.S.) and Harvard University (U.S.).

SMART is a private company founded in 1987. Employing more than 1,000 people, SMART is headquartered in Calgary, Alberta, Canada, with assembly facilities in Kanata, Ontario, and offices in Bonn, Tokyo, Shanghai, New York City, Chicago and Washington, DC. SMART has been issued and maintains a broad portfolio of patents with numerous U.S., Canadian and other patents pending. In 1992 SMART formed a strategic alliance with Intel® Corporation that resulted in joint product development and marketing efforts, and Intel's equity ownership in the company. SMART products are sold through dealers across North America and distributors worldwide. To learn more about SMART as a company and its products and programs, visit [www.smarttech.com](http://www.smarttech.com) and [www.education.smarttech.com](http://www.education.smarttech.com).